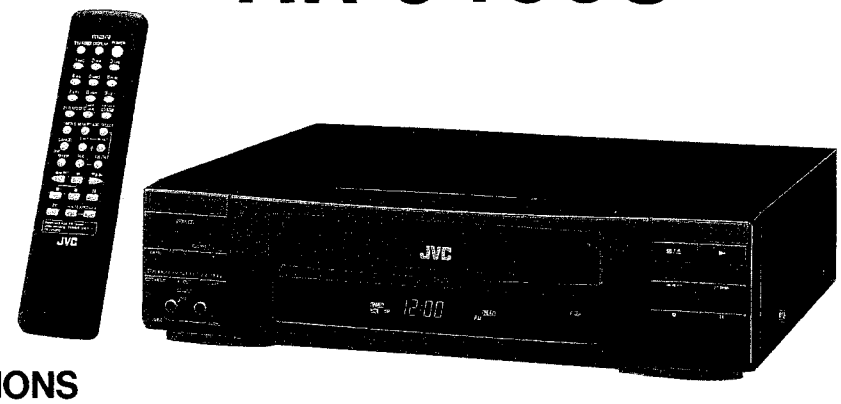
V12124

JVC

SERVICE MANUAL

VIDEO CASSETTE RECORDER

HR-J400U



VHS

SPECIFICATIONS

GENERAL

Power requirement		:	AC 120 V~, 60 Hz
Power consumption		:	19 W
Temperature			
	Operating	:	5°C to 40°C (41°F to 104°F)
	Storage	:	–20°C to 60°C (–4°F to 140°F)
Humidity			
	Operating	:	35% to 80%
	Storage	:	5% to 80%
Operating position		:	Horizontal only
Dimensions (WxHxD)		:	360 x 94 x 303 mm (14-3/16" x 3-3/4" x 11-15/16")
Weight		:	4.3 kg (9.5 lbs)
Format		:	VHS NTSC standard
Tape width		:	12.65 mm
Tape speed	(SP)	:	33.35 mm/sec (1-5/16 ips)
	(EP)	:	11.12 mm/sec (7/16 ips)
Maximum recording time	(SP)	:	160 min. with T-160 video cassette
	(EP)	:	480 min. with T-160 video cassette

VIDEO

Signal system	:	NTSC-type color signal and EIA monochrome signal, 525 lines/60 fields
Recording system	:	Rotary two-head helical scan system with slant double-azimuth combination video heads
Input	:	0.5 to 2.0 Vp-p, 75 ohms, unbalanced
Output	:	1.0 Vp-p, 75 ohms, unbalanced
Signal-to-noise ratio	:	45 dB
Horizontal resolution	:	240 lines

AUDIO

Recording system	:	Longitudinal track
Input	:	–8 dBs, more than 50 k-ohms, unbalanced
Output	:	–6 dBs, less than 1 k-ohm, unbalanced (100 k-ohms, load)
Frequency range	:	70 Hz to 10,000 Hz

TUNER

Tuning system	:	Frequency synthesized tuner
Channel coverage		
(VHF)	:	Channels 2–13
(UHF)	:	Channels 14–69
(CATV)	:	113 Channels
RF output	:	Channel 3 or 4 (switchable; preset to Channel 3 when shipped) 75 ohms, unbalanced

TIMER

Clock reference	:	AC line
Program capacity	:	1-year programmable timer/ 8-programs

ACCESSORIES

Provided accessories	:	RF cable (F-type), Infrared remote control unit, "AA" battery x 2, AC power cord

Specifications shown are for SP mode unless otherwise specified.
E. & O.E. Design and specifications subject to change without notice.

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No. 82339
February 1993

NOTE: For a technical description, please refer to Technical Guide VTG82063 General.

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Important Safety Precautions

Prior to shipment from the factory, JVC products are strictly inspected to conform with the recognized product safety and electrical codes of the countries in which they are to be sold. However, in order to maintain such compliance, it is equally important to implement the following precautions when a set is being serviced.

● Precautions during Servicing

1. Locations requiring special caution are denoted by labels and inscriptions on the cabinet, chassis and certain parts of the product. When performing service, be sure to read and comply with these and other cautionary notices appearing in the operation and service manuals.

2. Parts identified by the ⚠ symbol and shaded (▒) parts are critical for safety.
   Replace only with specified part numbers.
   Note: Parts in this category also include those specified to comply with X-ray emission standards for products using cathode ray tubes and those specified for compliance with various regulations regarding spurious radiation emission.

3. Fuse replacement caution notice.
   Caution for continued protection against fire hazard.
   Replace only with same type and rated fuse(s) as specified.

4. Use specified internal wiring. Note especially:
   1) Wires covered with PVC tubing
   2) Double insulated wires
   3) High voltage leads

5. Use specified insulating materials for hazardous live parts. Note especially:
   1) Insulation Tape
   2) PVC tubing
   3) Spacers
   4) Insulation sheets for transistors
   5) Barrier

6. When replacing AC primary side components (transformers, power cords, noise blocking capacitors, etc.) wrap ends of wires securely about the terminals before soldering.

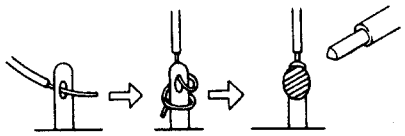


Fig. 1

7. Observe that wires do not contact heat producing parts (heat-sinks, oxide metal film resistors, fusible resistors, etc.)

8. Check that replaced wires do not contact sharp edged or pointed parts.

9. When a power cord has been replaced, check that 10—15 kg of force in any direction will not loosen it.

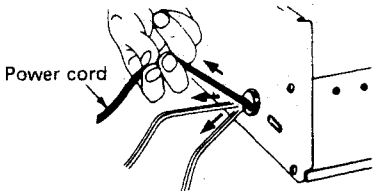


Fig. 2

10. Also check areas surrounding repaired locations.

11. Products using cathode ray tubes (CRTs)
    In regard to such products, the cathode ray tubes themselves, the high voltage circuits, and related circuits are specified for compliance with recognized codes pertaining to X-ray emission. Consequently, when servicing these products, replace the cathode ray tubes and other parts with only the specified parts. Under no circumstances attempt to modify these circuits. Unauthorized modification can increase the high voltage value and cause X-ray emission from the cathode ray tube.

12. Crimp type wire connector
    In such cases as when replacing the power transformer in sets where the connections between the power cord and power transformer primary lead wires are performed using crimp type connectors, if replacing the connectors is unavoidable, in order to prevent safety hazards, perform carefully and precisely according to the following steps.
    1) **Connector part number** : E03830-001
    2) **Required tool** : Connector crimping tool of the proper type which will not damage insulated parts.
    3) **Replacement procedure**
       (1) Remove the old connector by cutting the wires at a point close to the connector.
       Important : Do not reuse a connector (discard it).

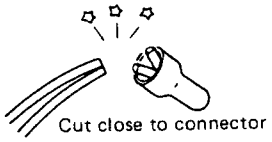


Fig. 3

(2) Strip about 15 mm of the insulation from the ends of the wires. If the wires are stranded, twist the strands to avoid frayed conductors.

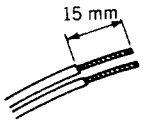


Fig. 4

(3) Align the lengths of the wires to be connected. Insert the wires fully into the connector.

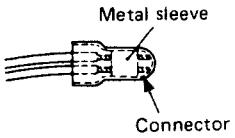


Fig. 5

(4) As shown in Fig. 6, use the crimping tool to crimp the metal sleeve at the center position. Be sure to crimp fully to the complete closure of the tool.

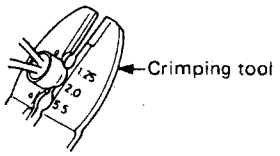


Fig. 6

(5) Check the four points noted in Fig. 7.

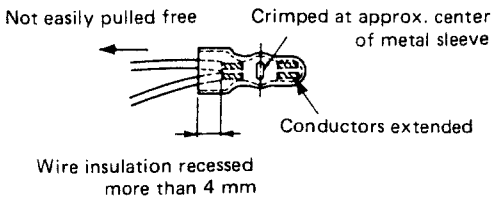

Not easily pulled free
Crimped at approx. center of metal sleeve
Conductors extended
Wire insulation recessed more than 4 mm

Fig. 7

INSTRUCTIONS (EXTRACT)

Safety Precautions

CAUTION
RISK OF ELECTRIC SHOCK
DO NOT OPEN

CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK,
DO NOT REMOVE COVER (OR BACK)
NO USER-SERVICEABLE PARTS INSIDE.
REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

Note to CATV system installer:
This reminder is provided to call the CATV system installer's attention to Article 820-40 of the NEC that provides guidelines for proper grounding and, in particular, specifies that the cable ground shall be connected to the grounding system of the building, as close to the point of cable entry as practical.

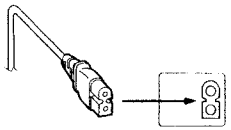
WARNING:
TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS UNIT TO RAIN OR MOISTURE.

CAUTION:
This video cassette recorder should be used with AC 120V~, 60 Hz only.
To prevent electric shocks and fire hazards, do NOT use any other power source.

CAUTION:
TO PREVENT ELECTRIC SHOCK, MATCH WIDE BLADE OF PLUG TO WIDE SLOT, FULLY INSERT.

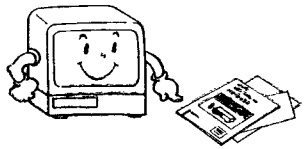
ATTENTION:
POUR ÉVITER LES CHOCS ÉLECTRIQUES, INTRODUIRE LA LAME LA PLUS LARGE DE LA FICHE DANS LA BORNE CORRESPONDANTE DE LA PRISE ET POUSSER JUSQU'AU FOND.

CAUTION:



To avoid electric shock or damage to the unit, first firmly insert the small end of the AC power cord into the VCR until it is no longer wobbly, and then plug the larger end of the AC power cord into an AC outlet.

NOTE:
- When you are not using the video recorder for a long period of time, it is recommended that you disconnect the power cord from the AC outlet.
- The rating plate and the safety caution are on the rear of the unit.
- Changes or modifications not approved by JVC could void user's authority to operate the equipment.
- Please read the "Precautions" section of this instruction manual and the "Video Products Safety Guide" enclosed with this manual before installing or operating the VCR.
- This instruction manual, and the other reference materials enclosed with it, contain important information on VCR operation and proper usage. Please keep them near your VCR in a place where you can easily access them for reference.



VHS HQ

- Cassettes marked "VHS" (or "S-VHS") can be used with this video cassette recorder.
- HQ VHS is compatible with existing VHS equipment.

Table Of Contents

How To Use This Instruction Manual

This instruction manual has been designed with both new and experienced users in mind. It begins with an introductory section, "Getting To Know Your VCR", followed by necessary set-up procedures in "Setting Up Your VCR". The next three sections —"Playing A Tape", "Recording On A Tape", and "Recording With The Timer" — take you step-by-step through these basic operations of your VCR. This is followed by "Special Features", in which a variety of your VCR's advanced functions are introduced. "If You Have Any Questions" is the section you should refer to if you experience any problems in VCR operation or if you need additional information regarding a feature or terminology. At the end of the book you will find "Warranty" information and the locations you can contact "For Servicing".

Throughout the book, if you ever need to refer to another page for instructions or information, you will be told so by a ☞ mark pointing to the page number.

Unless otherwise specified, operation buttons mentioned in the instructions refer to those located on the remote control, not those duplicated on the VCR.

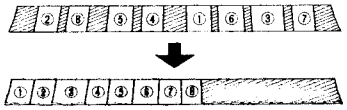
Remember, you must use your VCR correctly to fully enjoy it. Please use this manual effectively. It's the surest and quickest way to unlock the full potential of your new JVC VCR.

Some of your VCR's features

Family Message

It's like a built-in electronic bulletin board.

Random Assemble Editing



Lets you create complete, edited videos at the touch of a button.

Multi-Brand TV-Compatible Remote Control

Compatible with most major brands of televisions.

Getting To Know Your VCR
Your VCR's controls and connectors 4

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For Recording
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- To automatically start the "next" function 20

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● Safety Check after Servicing

Examine the area surrounding the repaired location for damage or deterioration. Observe that screws, parts and wires have been returned to original positions, Afterwards, perform the following tests and confirm the specified values in order to verify compliance with safety standards.

1. **Insulation resistance test**
Confirm the specified insulation resistance or greater between power cord plug prongs and externally exposed parts of the set (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.). See table 1 below.

2. **Dielectric strength test**
Confirm specified dielectric strength or greater between power cord plug prongs and exposed accessible parts of the set (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.). See table 1 below.

3. **Clearance distance**
When replacing primary circuit components, confirm specified clearance distance (d), (d') between soldered terminals, and between terminals and surrounding metallic parts. See table 1 below.

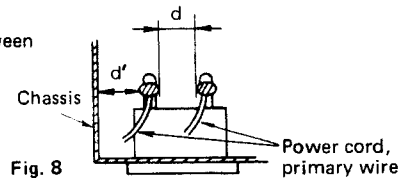


Fig. 8

4. **Leakage current test**
Confirm specified or lower leakage current between earth ground/power cord plug prongs and externally exposed accessible parts (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.).
Measuring Method: (Power ON)
Insert load Z between earth ground/power cord plug prongs and externally exposed accessible parts.
Use an AC voltmeter to measure across both terminals of load Z. See figure 9 and following table 2.

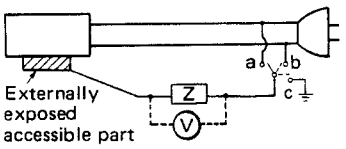


Fig. 9

5. **Grounding (Class I model only)**
Confirm specified or lower grounding impedance between earth pin in AC inlet and externally exposed accessible parts (Video in, Video out, Audio in, Audio out or Fixing screw etc.).
Measuring Method:
Connect milli ohm meter between earth pin in AC inlet and exposed accessible parts. See figure 10 and grounding specifications.

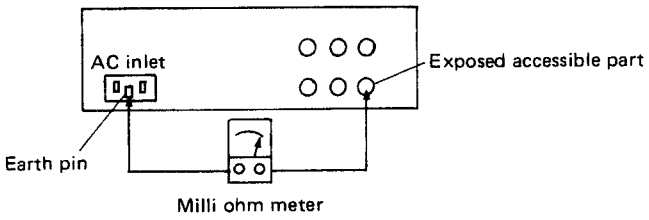


Fig. 10

Grounding Specifications

Region	Grounding Impedance (Z)
USA & Canada	Z ≦ 0.1 ohm
Europe & Australia	Z ≦ 0.5 ohm

AC Line Voltage	Region	Insulation Resistance (R)	Dielectric Strength	Clearance Distance (d), (d')
100 V	Japan	R≧1 MΩ/500 V DC	AC 1 kV 1 minute	d, d' ≧ 3 mm
100 to 240 V			AC 1.5 kV 1 minute	d, d' ≧ 4 mm
110 to 130 V	USA & Canada	–	AC 900 V 1 minute	d, d' ≧ 3.2 mm
110 to 130 V 200 to 240 V	Europe & Australia	R≧10 MΩ /500 V DC	AC 3 kV 1 minute (Class II) AC 1.5 kV 1 minute (Class I)	d ≧ 4 mm d' ≧ 8 mm (Power cord) d' ≧ 6 mm (Primary wire)

Table 1 Specifications for each region

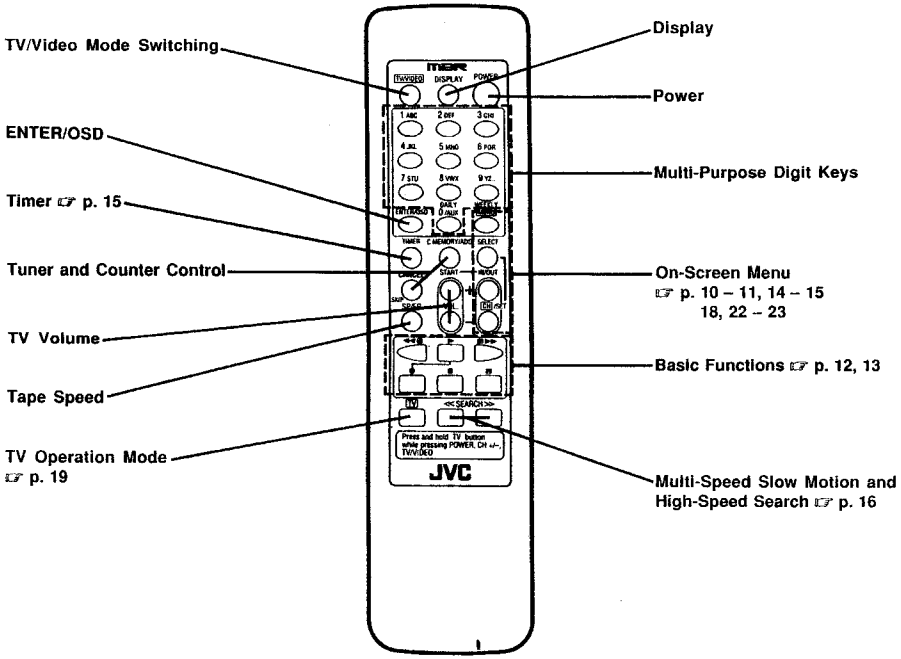
AC Line Voltage	Region	Load Z	Leakage Current (i)	a, b, c
100 V	Japan	1 kΩ	i ≦ 1 mA rms	Exposed accessible parts
110 to 130 V	USA & Canada	0.15 μF, 1.5 kΩ	i ≦ 0.5 mA rms	Exposed accessible parts
110 to 130 V 220 to 240 V	Europe & Australia	2 kΩ	i ≦ 0.7 mA peak i ≦ 2 mA dc	Antenna earth terminals
		50 kΩ	i ≦ 0.7 mA peak i ≦ 2 mA dc	Other terminals

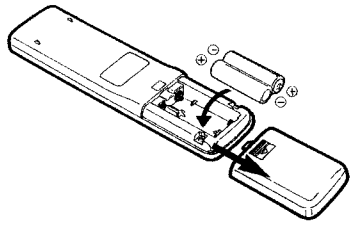
Table 2 Leakage current specifications for each region

Note: These tables are unofficial and for reference only. Be sure to confirm the precise values for your particular country and locality.

Getting To Know Your VCR (cont'd)

Wireless Remote Control


TV/Video Mode Switching
ENTER/OSD
Timer ☞ p. 15
Tuner and Counter Control
TV Volume
Tape Speed
TV Operation Mode ☞ p. 19
Display
Power
Multi-Purpose Digit Keys
On-Screen Menu ☞ p. 10 – 11, 14 – 15 18, 22 – 23
Basic Functions ☞ p. 12, 13
Multi-Speed Slow Motion and High-Speed Search ☞ p. 16
JVC



Installing Batteries

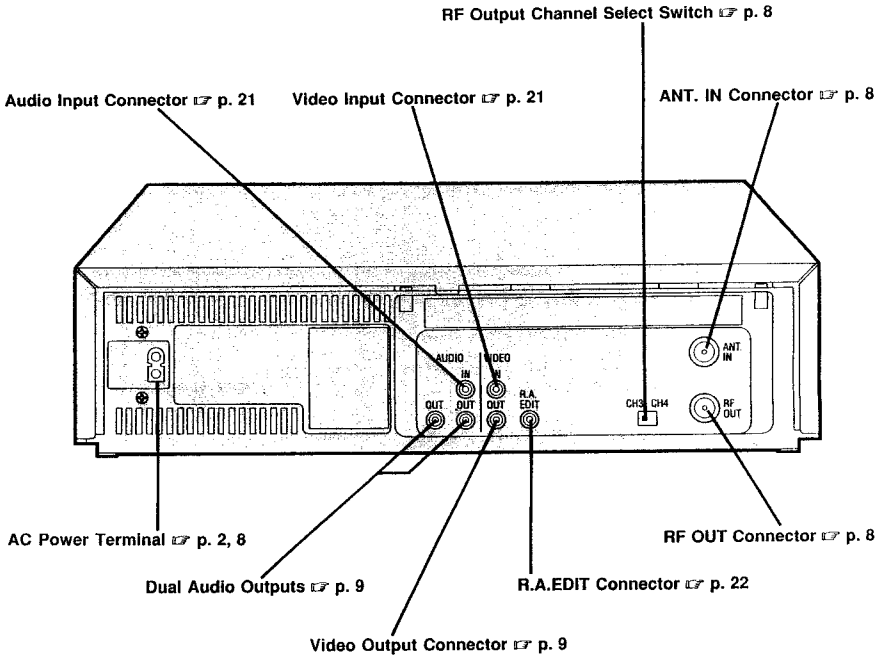
1 Slide the battery compartment cover in the direction of the arrow.
2 Insert 2 "AA"-size batteries (provided) in the correct directions.
3 Replace the cover.

How To Use

This remote control can operate most of your VCR's functions.
1 Point the remote control toward the VCR's sensor window.
2 Press the appropriate operation button.
- The maximum operating distance of the remote control is about 8 m (26 ft).

This remote control can also operate TVs of various brands. For instructions, ☞ p. 19.

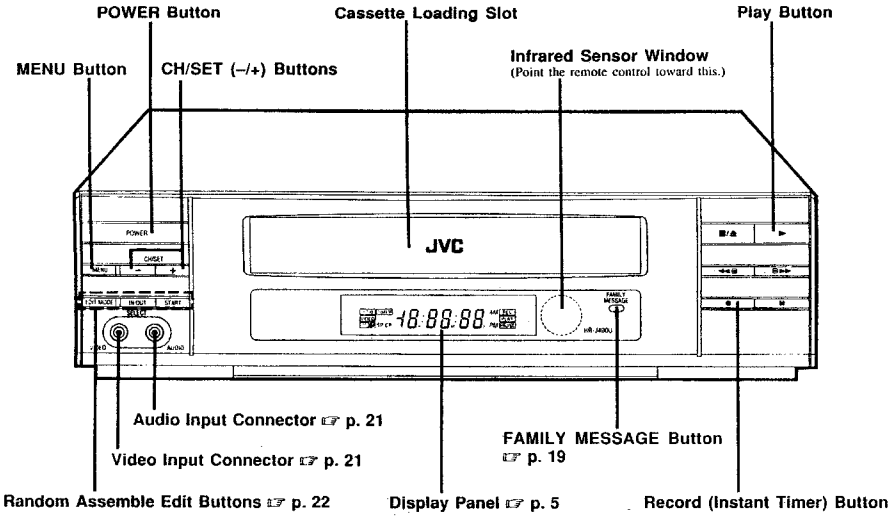
Back Panel



Getting To Know Your VCR

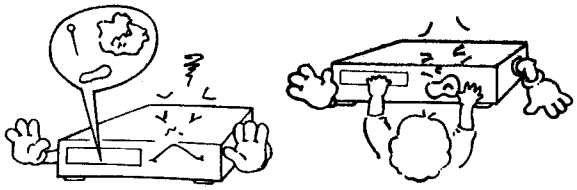
Your VCR's controls and connectors

Front Panel

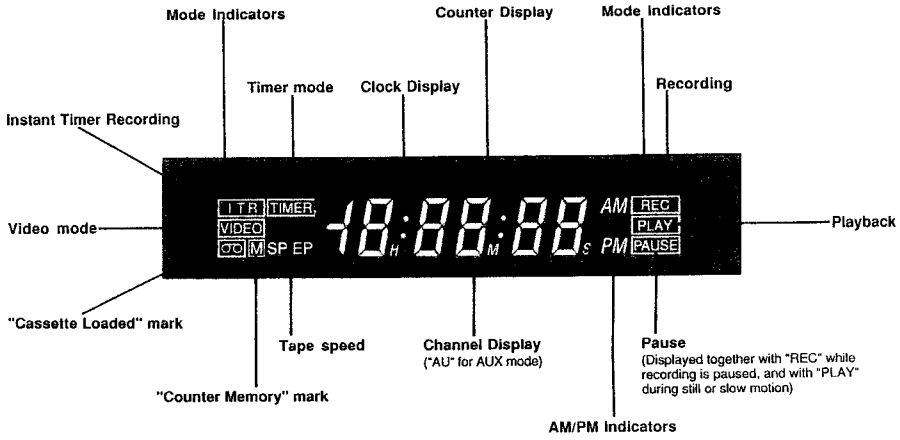


WARNING

- Do not insert fingers or foreign objects into the cassette loading slot since this could lead to injury or damage to the mechanism. Be especially careful with children.
- Do not try to pull out a cassette once automatic loading has started. This could cause injury or damage the mechanism.



Display panel

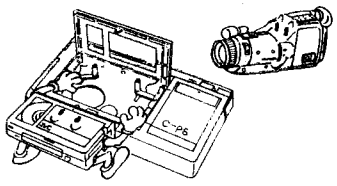


- Pressing DISPLAY lets you change the type of display: Counter, Channel, or Clock.
- Whenever the VCR is turned off, the FDP's brightness is automatically dimmed.

Usable cassettes

Full-Size VHS
T-30 (ST-30**)
T-60 (ST-60**)
T-90
T-120
T-160 (ST-160**)

Compact VHS*
TC-20 (ST-C20**)
TC-30 (ST-C30**)

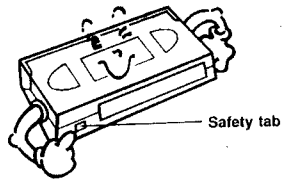


* Compact VHS camcorder recordings can be played on this video recorder. Simply place the recorder cassette into a C-P6 Cassette Adapter and it can be used just like any full-sized VHS cassette.

** This video recorder can record on regular VHS and Super VHS cassettes. However, it will record and play back regular VHS signals only. It is not possible to play back a recorded Super VHS tape.

Accidental erasure prevention

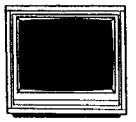
- To prevent accidental recording on a recorded cassette, remove its safety tab. To record on it later, cover the hole with adhesive tape.



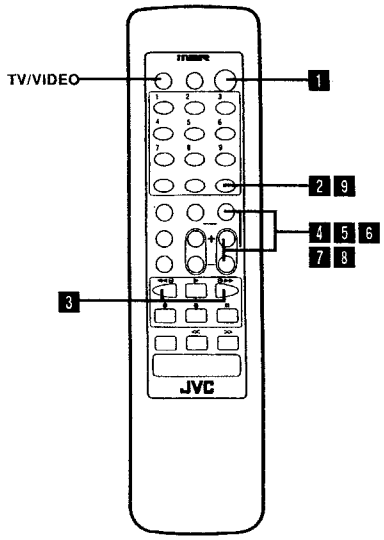
Setting Up Your VCR (cont'd)

Setting your VCR's clock

Since your VCR bases all of its timer recording start and stop "decisions" on the time kept by its built-in clock, accurate setting of this clock is crucial for proper timer-recording results.



POWER ON;
SELECT CHANNEL
3 OR 4 (OR AV MODE)



You can also use the POWER, MENU, REW, FF, SET and SELECT buttons on the VCR.

NOTE:
- When re-adjusting the time, the Timer Program screen will appear in step 2. So press MENU again to display the Initial Set screen.

A TURN ON THE VCR

1 Press POWER.
- If watching on channel 3 or 4, press TV/VIDEO to select the VIDEO mode. The VCR's VIDEO indicator will light.
- If various "Family Message" displays appear on your TV screen, press any button except VOL, TV or POWER to stop them. (☞p.9, 19.)

B ACCESS THE ON-SCREEN MENU

2 Press MENU.
- The Initial Set screen will appear.

3 If you want to change the on-screen language to Spanish, press ◄◄ (Rewind).
- Press ►► (Fast Forward) to change back to English.

C INPUT THE MONTH/DAY/YEAR

4 Press SET to set the month, and then press SELECT.
5 Press SET to set the day, and then press SELECT.
6 Press SET to set the year, and then press SELECT.
- The day of the week will automatically appear.

D INPUT THE TIME

7 Press SET to set the hour (making sure that AM or PM is correct), and then press SELECT.
8 Press SET to set the minutes, then press SELECT.

TO MAKE CORRECTIONS

Press SELECT so that the item you want to change blinks. Reset that item. Continue to step E.

E START THE CLOCK

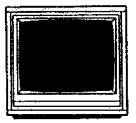
9 Press MENU.
- The VCR's display panel will show the time.

POWER FAILURE INDICATOR

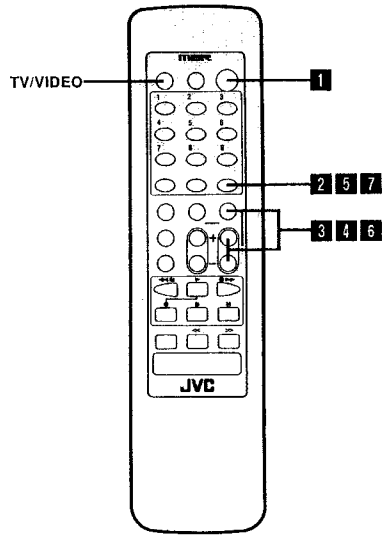
- The clock resets to "12:00 AM" and starts blinking when there has been a power failure. Reset the time to return the clock display to normal.

Assigning channels to your VCR's tuner

The Auto Set feature introduced here automatically assigns receivable channels in your area to the CHANNEL UP/DOWN buttons and skips the others so you won't have to go through any "blank" channels to get to the one you want.



POWER ON;
SELECT CHANNEL
3 OR 4 (OR AV MODE)



You can also use the POWER, MENU, SET and SELECT buttons on the VCR.

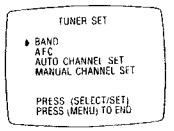
A TURN ON THE VCR

1 Press POWER.
- If watching on channel 3 or 4, press TV/VIDEO to select the VIDEO mode. The VCR's VIDEO indicator will light.

B ACCESS THE ON-SCREEN MENU

2 Press MENU three times.
- The Tuner Set screen should be displayed

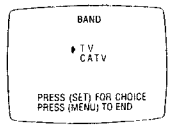
3 Press SET to move the cursor to "BAND", and then press SELECT



C SELECT THE BAND

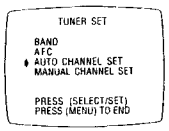
4 Press SET to choose "TV" or "CATV".
- The BAND select feature has 2 settings (TV and CATV). Set to TV if your antenna provides only UHF and VHF channels. Set to CATV if your antenna system is a cable TV line.

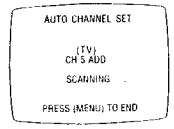
5 Press MENU.



D START AUTO SET

6 Press SET to move the cursor to "AUTO CHANNEL SET", and then press SELECT.
- Auto set is in progress and "SCANNING..." is displayed.
- When available channels are scanned, "ADD" will be displayed on the screen.
- When unavailable channels are skipped, "SKIP" will be displayed.
- After completion of auto set, the lowest tuned-in channel and "SCAN COMPLETED" are displayed.
- If "SCAN COMPLETED — NO SIGNAL —" is displayed, check the band setting and connections, and start again. ☞ p.8, 9.



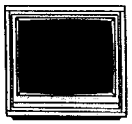


E RETURN TO THE TV SCREEN

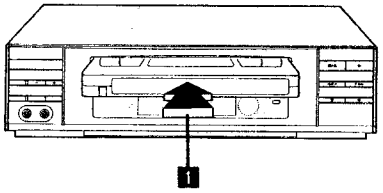
7 Press MENU as many times as necessary.

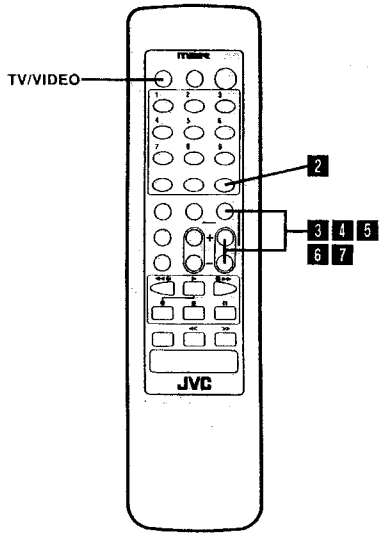
Recording With The Timer

The timer programming method introduced here is the most basic of those possible with your VCR. You can program up to 8 recordings over a one-year period. TIMER PROGRAMMING IS NOT POSSIBLE UNLESS THE CLOCK HAS BEEN SET.



POWER ON;
SELECT CHANNEL
3 OR 4 (OR AV MODE)





You can also use the MENU, SET and SELECT buttons on the VCR.

A LOAD A CASSETTE

1 Insert a cassette with the safety tab in place.
- The VCR power will come on automatically. If watching on channel 3 or 4 be sure that the VIDEO indicator is lit; if not, press TV/VIDEO so that it lights.

B ACCESS THE ON-SCREEN MENU

2 Press MENU.
- The Program Set screen will appear.
- If the clock has not been set, the Initial Set screen will appear. To set the clock, ☞p.10

C SELECT A PROGRAM NUMBER

3 Press SET to move to a vacant program number, and then press SELECT.
- Initially all programs are vacant, and the cursor is at program 1. So simply press SELECT.

PROGRAM 1
DATE --/--
START --:-- AM
STOP --:-- AM
CHANNEL -- SP
PRESS (SELECT/SET)
PRESS (MENU) TO END

D INPUT THE DATE

4 Press SET to set the month, and then press SELECT.
5 Press SET to set the day, and then press SELECT.
- The day of the week will automatically appear.

PROGRAM 1
DATE 2/28 FRI
START --:-- AM
STOP --:-- AM
CHANNEL -- SP
PRESS (SELECT/SET)
PRESS (MENU) TO END

E INPUT THE START TIME

6 Press SET to set the hour (making sure that AM or PM is correct), and then press SELECT.
7 Press SET to set the minutes, and then press SELECT.

PROGRAM 1
DATE 2/28 FRI
START 12:00 PM
STOP --:-- AM
CHANNEL -- SP
PRESS (SELECT/SET)
PRESS (MENU) TO END

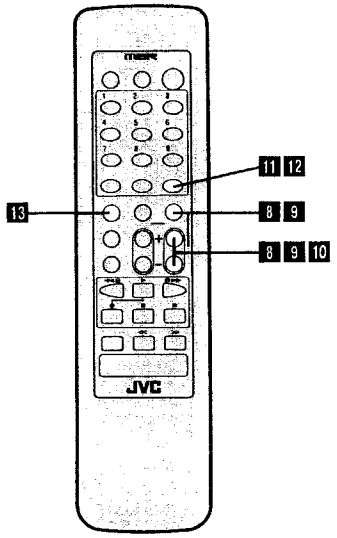
(Continued on next page.)

"ERROR" WARNING

If the start time you input has already passed (i.e. is prior to the present date and time), the VCR will flash "ERROR" on the Program Set screen.

PROGRAM 1
— ERROR —
DATE 3/22 SUN
START 12:30 AM
STOP --:-- AM
CHANNEL -- SP
PRESS (SELECT/SET)
PRESS (MENU) TO END

Check if you've input the correct time and date. Remember: late night shows beginning at midnight or later must have the next day's date.



TO DISENGAGE THE TIMER

For safety, when AUTO TIMER is "OFF", your VCR disables all other functions while in the timer mode.
- To use your VCR, first disengage the timer mode by pressing TIMER again. Now all functions will be operable.
- To re-engage the timer, press TIMER.

F INPUT THE STOP TIME

8 Set the stop time in the same way as you set the start time in step E.

PROGRAM 1
DATE 2/28 FRI
START 12:00 PM
STOP 1:00 PM
CHANNEL -- SP
PRESS (SELECT/SET)
PRESS (MENU) TO END

G INPUT THE CHANNEL NUMBER

9 Press SET to set the channel number, and then press SELECT.

PROGRAM 1
DATE 2/28 FRI
START 12:00 PM
STOP 1:00 PM
CHANNEL 125 SP
PRESS (SELECT/SET)
PRESS (MENU) TO END

H SET THE TAPE SPEED

10 Press SET to choose SP or EP.

PROGRAM 1
DATE 2/28 FRI
START 12:00 PM
STOP 1:00 PM
CHANNEL 125 EP
PRESS (SELECT/SET)
PRESS (MENU) TO END

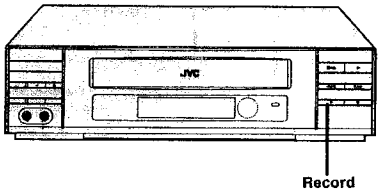
I RETURN TO THE TV SCREEN

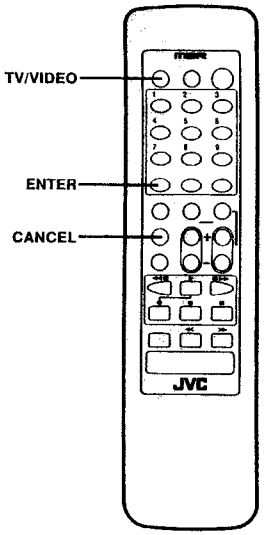
11 Press MENU. (Leave AUTO TIMER "OFF" for now.)
12 Press MENU again.

J SET TO TIMER MODE

13 Press TIMER.
- The VCR will enter the timer mode and power will go off.

For AUTO TIMER and other timer programming features, ☞ p.18.
For other error indications, ☞ p.25.





For Recording

To set the VCR to shut-off automatically (Instant Timer Recording)

During Recording...

1. Press the VCR's Record button. The "ITR" indication blinks and "0:30" appears, advising that power will switch off after 30 minutes.

2. Press Record again to delay the off-time by 30-minute increments (up to 9 hours).

- This function is available only using the Record button on the VCR.
- After the off-time is set, the display returns to the previously displayed mode (counter, channel or clock).
- You can check the time remaining before the VCR shuts off by pressing Record once; the remaining time is displayed for 5 seconds. (Pressing Record more than once will delay the shut-off time.)

To watch a program while recording another

During Recording...

1. Press TV/VIDEO. The VCR's VIDEO indicator and the TV broadcast being recorded will disappear.
2. Use the channel controls on the TV to select the other channel you wish to view.

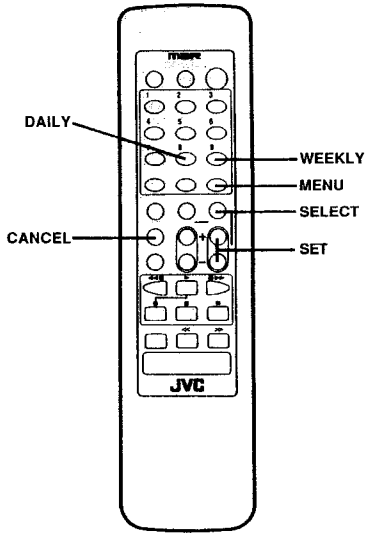
- The program selected with the TV channel controls will appear on the TV screen while the one selected with the VCR channel controls will be recorded on the tape.

To display the elapsed recording time

Before starting recording...

1. Press CANCEL.
   - The counter will be reset to "0H 00M 00S", and will show the exact elapsed time as the tape runs.
2. After starting recording, press ENTER at any time to check the elapsed time on the TV screen.
3. Press ENTER again to clear it from the screen.

Special Features (cont'd)



For Timer-Recording

To timer-record serials (daily or weekly)

1. Finish steps A – D in "INPUT THE DATE" (☞p.14).
2. Press DAILY (Digit key 8).
   - "DAILY" will appear. This records a TV show everyday (Monday through Friday) at the same time.

Or...

2. Press WEEKLY (Digit key 9).
   - "WEEKLY" will appear. This records a TV show once a week (example: every Sunday) at the same time.

3. Set the start time, stop time, channel and tape speed. ☞ p.14-15, steps E-J.

To cancel a program in the timer

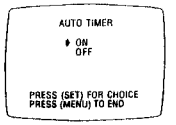
Make sure the timer mode is disengaged first. Then...

1. Press MENU.
2. Press SET to reach the program you wish to cancel.
3. Press CANCEL to erase the program displayed on the screen from memory.
   - Repeat steps 2 and 3 as necessary.
4. Press MENU as many times as necessary to exit.

To use "Auto Timer"

What this feature does: Usually, the timer mode is not engaged unless the TIMER button is pressed. But with AUTO TIMER set to ON, the timer mode is automatically engaged when the VCR's power is turned off, and is disengaged whenever VCR power is turned on again.

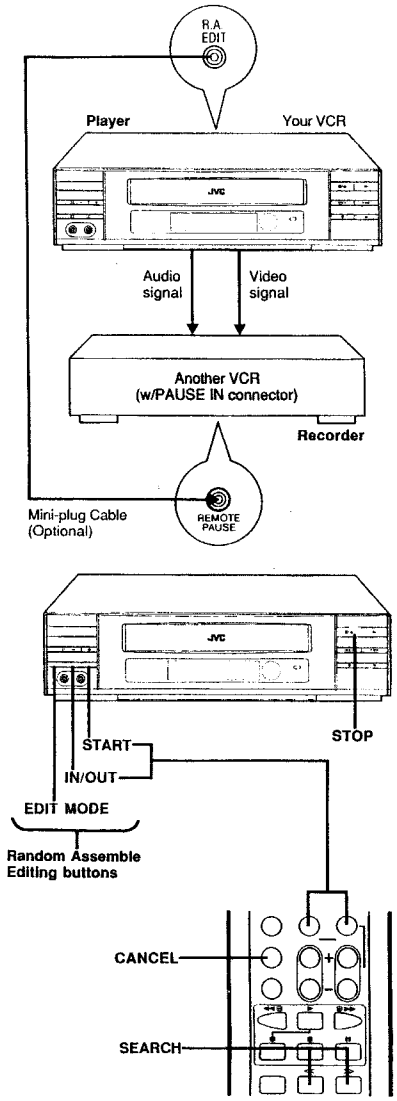
1. During step "I" of "Recording With The Timer" (☞ p.15), press SET to choose "ON", and press MENU.



Or...

1. Press MENU four times (to access the Function Set screen).
2. Press SET to move the cursor to "AUTO TIMER", and then press SELECT.
3. Press SET to choose "ON".
4. Press MENU.

Special Features (cont'd)



For Editing (cont'd)

Random Assemble Editing

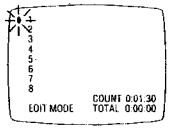
This function makes it easier to create edited videos when your VCR is used as the source player in combination with another video deck which is equipped with a PAUSE (i.e. remote PAUSE IN) terminal. You can pre-program up to 8 scenes or "cuts" for automatic editing in the sequence you have specified.

PREPARATION

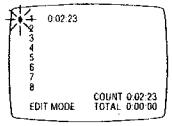
1. Connect your VCR's VIDEO OUT and AUDIO OUT connectors to the recording deck's VIDEO IN and AUDIO IN connectors.
2. Connect your VCR's R.A.EDIT connector to the recording deck's PAUSE connector.
3. Turn both units on.
4. Engage the recorder's AUX(iliary) mode.

OPERATION

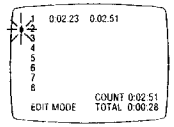
5. Insert a recorded cassette into your VCR.
6. Play back the tape in your VCR.
7. Press the EDIT MODE button.
   - On-screen display is superimposed on the video playback.



8. Use the SEARCH buttons to search for the point where you want an edited scene to start, and press IN/OUT.
   - The cut-in point is registered in memory.



9. Use the SEARCH buttons to search for the point where you want the scene to end, and press IN/OUT.
   - The cut-out point is registered in memory.
   - The "TOTAL" reading displays the total running time of the edited scenes.



10. Specify additional scenes by repeating steps 8 – 9.

If You Have Any Questions

Before requesting service...

Power or Tape Transport Problems?

Symptoms	Check points
No power is applied to the VCR.	• Is the power cord disconnected? — Connect it.
Remote control does not operate the VCR.	• Did you load batteries? — Make sure they're loaded in the correct directions. • Are the batteries discharged? — Replace with fresh batteries.
Clock is functioning properly, but the VCR cannot be powered.	• Is "TIMER" displayed on the display panel? — Press the TIMER button to extinguish the display.
Cassette will not load. Gets stuck and is ejected a few seconds later.	• Are you inserting the cassette correctly? Incorrect insertion causes the built-in safety mechanism to automatically eject the cassette. — Wait a few seconds and re-insert correctly. — Be sure to push the middle of the cassette's label side and be sure the window side is up.
Tape stops during rewind or fast-forward.	• Is the C. MEMORY button pressed? — Press again to make "M" disappear from the counter display.
Tape will not rewind or fast-forward.	• Is the tape already fully rewound or fast-forwarded? — Check the cassette.

Playback Problems?

Symptoms	Check points
Playback picture does not appear while the tape is running.	• If you are using RF OUT connection, is the TV receiver's channel selector set to the correct video channel? — Set it to the RF converter channel (3 or 4). (☞p.8) • If you are using AV connection, is the TV receiver set to the AV mode? — Set it to the AV mode.
Noise appears during visual search.	• This is normal.
Noise appears during normal playback.	• Is the automatic tracking mode engaged? — Try manual tracking. (☞p.16)
Noise appears during slow playback.	— Try manual tracking. (☞ p.16)
Playback picture is blurred or interrupted while TV broadcasts are clear.	• Video heads may be dirty. — Head cleaning is necessary. Consult your JVC dealer (☞ p.28).

Recording Problems?

Symptoms	Check points
Recording cannot be started.	• Is a cassette loaded? • Is the safety tab on the cassette removed? — Reseal the slot with adhesive tape (☞ p. 5)
TV broadcasts cannot be recorded.	• Has "AUX" been selected by mistake? — Set to the desired channel.
Tape-to-tape editing is not possible.	• Is the camcorder or VCR correctly connected? • Are all necessary power switches turned ON? • Has "AUX" been selected? — Set to "AUX". — If using a rear panel input connection, make sure nothing is connected to the front panel connectors. (☞ p. 21)
Camera recording is not possible.	• Is the camcorder correctly connected? • Has "AUX" been selected? — Set to "AUX".

If You Have Any Questions (cont'd)

Specifications

GENERAL

Power requirement	:	AC 120 V~, 60 Hz
Power consumption	:	19 W
Temperature		
Operating	:	5°C to 40°C (41°F to 104°F)
Storage	:	–20°C to 60°C (–4°F to 140°F)
Humidity		
Operating	:	35% to 80%
Storage	:	5% to 80%
Operating position	:	Horizontal only
Dimensions (WxHxD)	:	360 x 94 x 303 mm (14-3/16" x 3-3/4" x 11-15/16")
Weight	:	4.3 kg (9.5 lbs)
Format	:	VHS NTSC standard
Tape width	:	12.65 mm
Tape speed (SP)	:	33.35 mm/sec (1-5/16 ips)
(EP)	:	11.12 mm/sec (7/16 ips)
Maximum recording time (SP)	:	160 min. with T-160 video cassette
(EP)	:	480 min. with T-160 video cassette

VIDEO

Signal system	:	NTSC-type color signal and EIA monochrome signal, 525 lines/60 fields
Recording system	:	Rotary two-head helical scan system with slant double-azimuth combination video heads
Input	:	0.5 to 2.0 Vp-p, 75 ohms, unbalanced
Output	:	1.0 Vp-p, 75 ohms, unbalanced
Signal-to-noise ratio	:	45 dB
Horizontal resolution	:	240 lines

AUDIO

Recording system	:	Longitudinal track
Input	:	–8 dBs, more than 50 k-ohms, unbalanced
Output	:	–6 dBs, less than 1 k-ohm, unbalanced (100 k-ohms, load)
Frequency range	:	70 Hz to 10,000 Hz

TUNER

Tuning system	:	Frequency synthesized tuner
Channel coverage		
(VHF)	:	Channels 2–13
(UHF)	:	Channels 14–69
(CATV)	:	113 Channels
RF output	:	Channel 3 or 4 (switchable; preset to Channel 3 when shipped) 75 ohms, unbalanced

TIMER

Clock reference	:	AC line
Program capacity	:	1-year programmable timer/ 8-programs

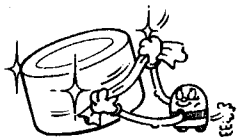
ACCESSORIES

Provided accessories	:	RF cable (F-type), Infrared remote control unit, "AA" battery x 2, AC power cord

Specifications shown are for SP mode unless otherwise specified.
E. & O.E. Design and specifications subject to change without notice.

About head cleaning

Accumulation of dirt and other particles on the video heads may cause the playback picture to become blurred or interrupted. Although this model is equipped with a built-in head cleaner which automatically cleans the heads, reducing the likelihood of dirty heads, if such troubles are encountered please consult the nearest JVC dealer.



A built-in head cleaner automatically cleans the video heads and head drum whenever a tape is loaded or unloaded to reduce head clogging.

For Servicing

HOW TO LOCATE YOUR JVC SERVICE CENTER

TOLL FREE: 1-800-537-5722

Dear customer:
In order to receive the most satisfaction from your purchase, read the instruction booklet before operating the unit. In the event that repair is necessary, or for the address nearest your location, please refer to the factory service center list below or within the Continental United States, call 1-800-537-5722 for your authorized servicer. Remember to retain your Bill of Sale for Warranty Service.

— JVC

JVC SERVICE & ENGINEERING COMPANY OF AMERICA
DIVISION OF US JVC CORP.

FACTORY SERVICE CENTER LOCATIONS

107 Little Falls Road
Fairfield, NJ 07004-2105
(201) 808-9279

1500 Lakes Parkway
Lawrenceville, GA 30243-5357
(404) 339-2522

705 Enterprise Street
Aurora, IL 60504-8149
(708) 851-7855

5665 Corporate Avenue
Cypress, CA 90630-0024
(714) 229-8011

10700 Hammerly, Suite 110
Houston, TX 77043
(713) 935-9331

2969 Mapunapuna Place
Honolulu, HI 96819-2040
(808) 833-5828

230 Eliot Street
Ashland, MA 01721-2377
(508) 881-5923

14505 Commerce Way
Miami Lakes, FL 33016-1512
(305) 362-6252

890 Dubuque Avenue
South San Francisco, CA 94080-1804
(415) 871-2666

Sophisticated electronic products may require occasional service. Just as quality is a keyword in the engineering and production of the wide array of JVC products, service is the key to maintaining the high level performance for which JVC is world famous. The JVC service and engineering organization stands behind our products.

NATIONAL HEADQUARTERS
JVC SERVICE & ENGINEERING COMPANY OF AMERICA
DIVISION OF US JVC CORP.
107 Little Falls Road
Fairfield, NJ 07004-2105

If you ship the product...

Pack your JVC unit in the original carton or one of equivalent size and strength. Enclose, with the unit, a letter stating the problem or symptom that exists and also a copy of the receipt or bill of sale you received when you purchased your JVC unit. Print your home return address on the outside and the inside of the carton. Send to the appropriate JVC Factory Service Center as listed above.

Don't service it yourself.

CAUTION

To prevent electrical shock, do not open the cabinet.
No user serviceable parts inside.
Refer servicing to qualified service personnel.

ACCESSORIES

To purchase accessories for your JVC product, you may contact your local JVC Dealer. Or from the 48 Continental United States call toll free: 1-800-882-2345.

SECTION 1
DISASSEMBLY AND MECHANISM ADJUSTMENT

1.1 DISASSEMBLY

1.1.1 Top cover

1. Take out 4 screws Ⓐ and a screw Ⓑ.
2. To remove the top cover, slide in direction of arrow and lift away.

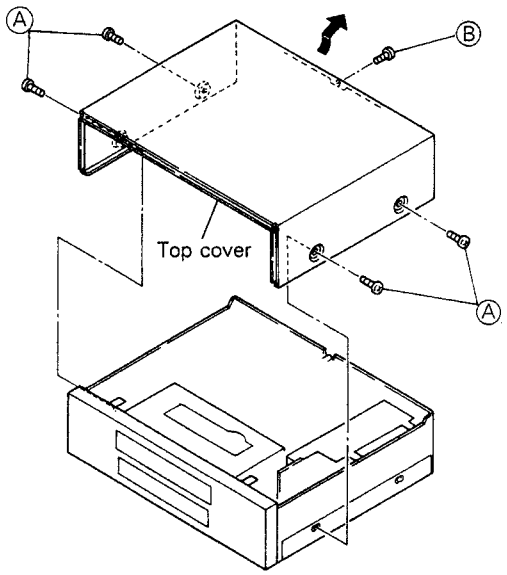


Fig. 1-1-1 Top cover

1.1.2 Front panel assembly

1. Remove the top cover.
2. Carefully disengage 2 tabs ⓐ of the front panel assembly from the upper side of the chassis.
3. Pull the front panel assembly forward you to disengage 3 tabs ⓑ of the front panel assembly from the bottom of the chassis, then remove the front panel assembly.

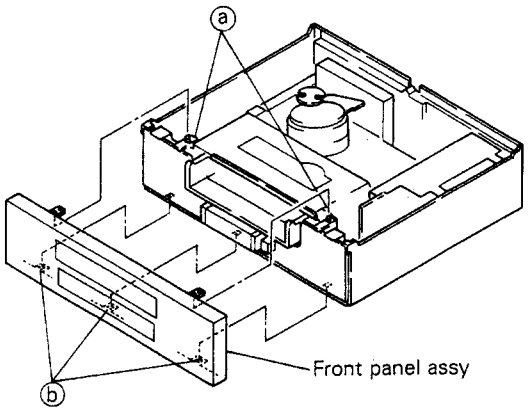


Fig. 1-1-2 Front panel assembly

1.1.3 Bottom cover

1. Remove the top cover.
2. Disengage 7 claws ⓐ from the bottom of the chassis.
3. Disengage the bottom cover from the bottom of the chassis.

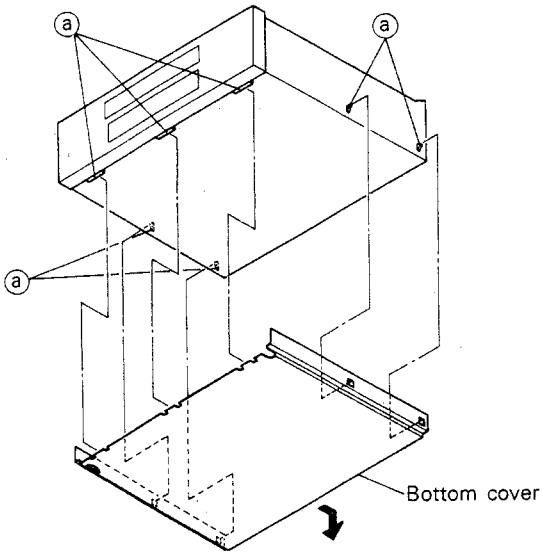


Fig. 1-1-3 Bottom cover

1.1.4 SWITCHING REGULATOR board assembly

1. Remove the top cover.
2. Take out 2 screws Ⓒ and 2 screws Ⓓ.
3. Remove the SWITCHING REGULATOR board assembly in direction of arrow.

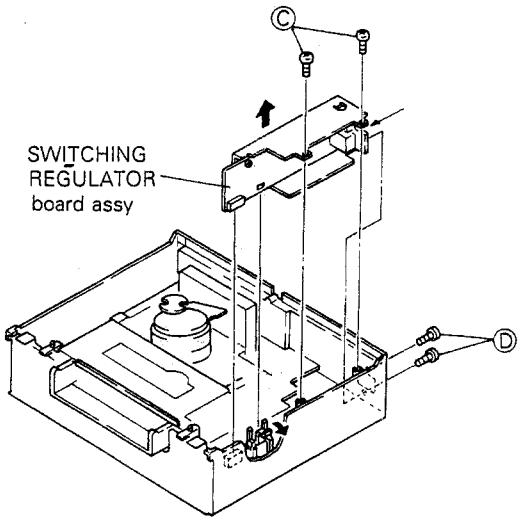


Fig. 1-1-4 SWITCHING REGULATOR board assembly

1.1.5 TIMER/DISPLAY/SWITCH board assembly

1. Remove the top cover and front panel.
2. Disengage 3 claws (a) from the chassis.
3. Disengage 3 claws (b), then remove the TIMER/DISPLAY/SWITCH board assembly in direction of arrow.

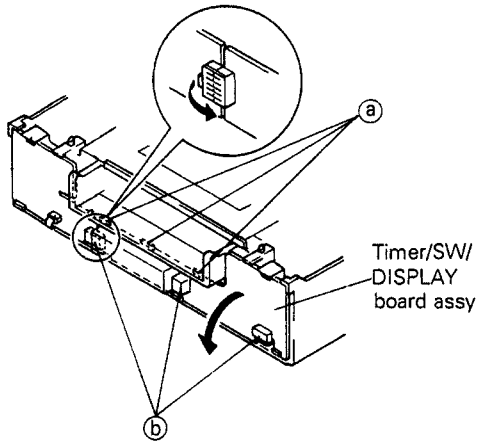


Fig. 1-1-5 TIMER/DISPLAY/SW board assembly

1.1.6 Cassette housing assembly

1. Remove the top cover, front panel, MAIN board assembly.
2. Take out 6 screws (F).
3. Remove the cassette housing assembly in direction of arrow.

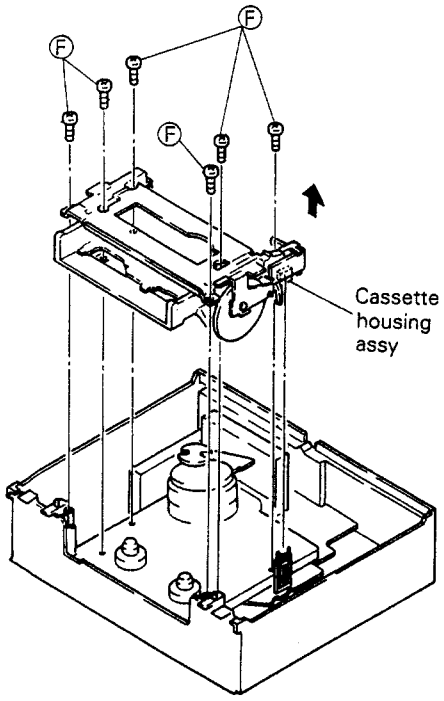


Fig. 1-1-6 Cassette housing assembly

1.1.7 PRE/REC board assembly

1. Remove the top cover
2. Take out 1 screw (G) and Remove the shield.
3. Disconnect connectors CN501 and CN502 from the PRE/REC board assembly.
4. Take out 1 screw (H).
5. Remove the PRE/REC board assembly in direction of arrow.

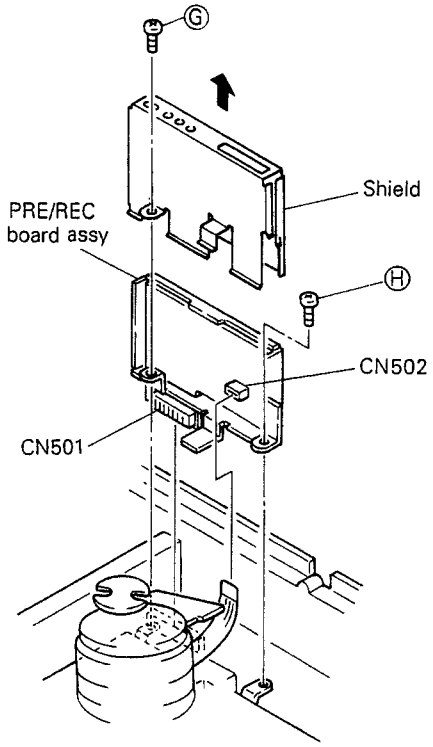


Fig. 1-1-7 PRE/REC board assembly

1.1.8 Drum assembly

1. Remove the top cover.
2. Remove the inertia plate, washer and head cleaner assy, then disconnect a connector.
3. Take out 3 screws (L).

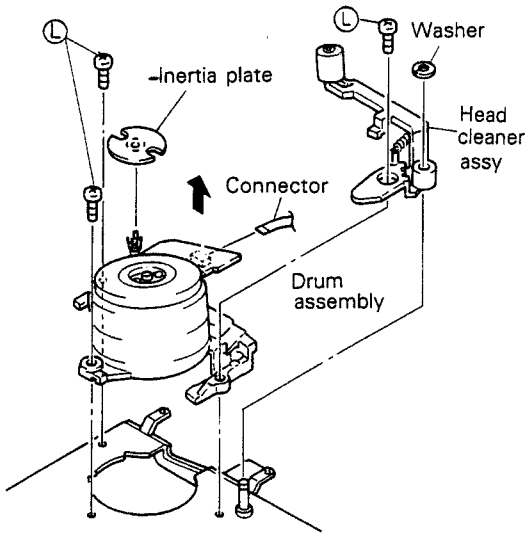


Fig. 1-1-8 Drum assembly

1.1.9 Cassette housing installation

Note: ***Observe the mechanical phase and position (see figure) when installing the cassette housing assembly. If these are incorrect, the system will not operate properly even when tape is inserted.***

1. Check that the marks of the control cam and pinch roller cam are aligned. If necessary, turn the worm clutch by hand to adjust the position.

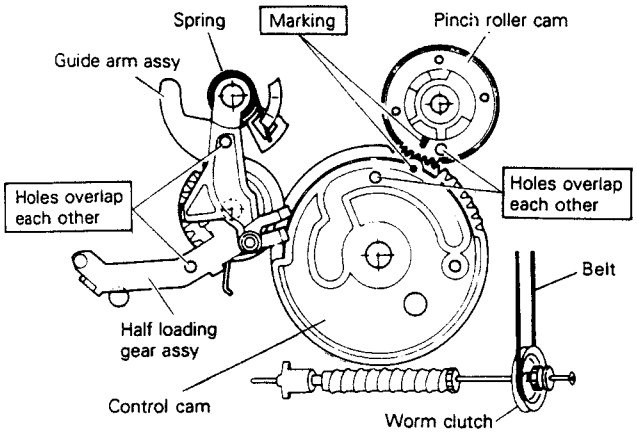


Fig. 1-1-9 Control cam and pinch roller cam position

2. Confirm that the clutch of the worm clutch assembly is locked. If necessary, engage the locked.

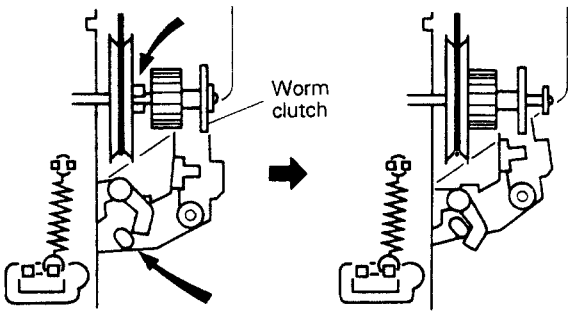


Fig. 1-1-10(a) Not locked **Fig. 1-1-10(b)** Lock engaged

3. Install the from panel as shown in Fig. 1-1-11 and re-engage the tabs. Supply power and use a spare cassette to check for normal loading and eject operations.

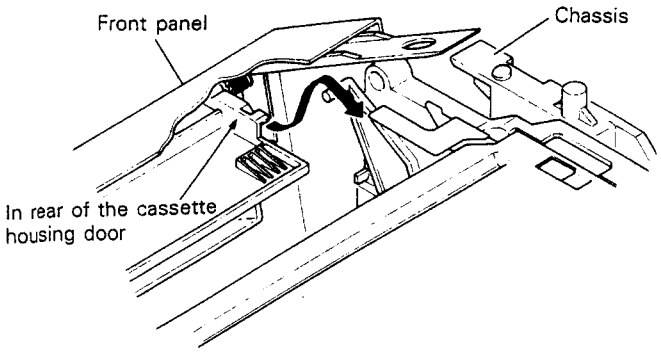


Fig. 1-1-11 Cassette housing door

1.1.10 Main deck assembly

1. Remove the top cover, front panel and cassette housing assembly.
2. Take out 1 screw Ⓙ and disengage 2 connectors ⓐ from the chassis.
3. Remove the main deck assembly in direction of arrow.

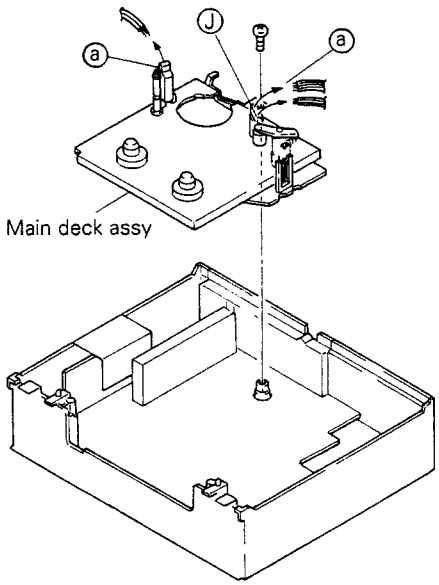


Fig. 1-1-12 Main deck assy

1.1.11 MAIN board assembly

1. Remove the top cover.
2. Take out 2 screws Ⓚ and disengage a claw ⓐ from the chassis.
3. Remove the MAIN board assembly in the direction of arrow.

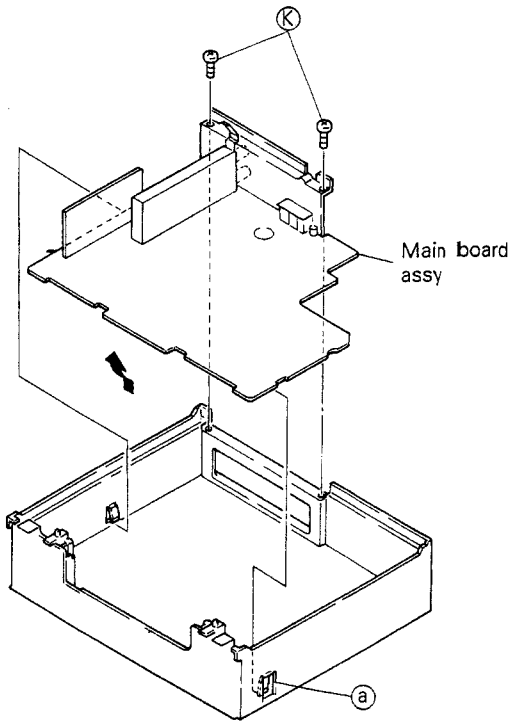


Fig. 1-1-13 Main board assy

SECTION 2
MECHANISM ADJUSTMENT

2.1 PREPARATION

2.1.1 Precautions

1) Disconnect VCR from AC power before soldering.
2) Avoid imparting stress to wires when disengaging connectors.
3) Determine and correct the cause of difficulty before proceeding to adjustments. Do not disturb settings unnecessarily.
4) Use care not to damage tabs, claws, etc. during repairs.
5) Install the cassette housing assembly only when the mechanism is in the Eject or Stop mode position. In the Eject mode, the internal holder of the housing is fully raised. This is fully lowered in the Stop mode.
6) When installing the front panel assembly, be sure to engage the housing door with the door lever of the cassette housing assembly. If this is omitted, the door will not open at Eject and the cassette cannot be removed.
See Sec.1 DISASSEMBLY.

2.1.2 Check without cassette housing

Mechanism operations can be observed easily by removing the cassette housing assembly. Note the following.

1) Disable the photo transistor sensor (END SENSOR) on the main-deck by applying an opaque cover.
2) Connect pins 2 and 3 of Main board connector CN601.
3) Select the desired modes with the operation buttons. However, notice that without tape, setting for the reverse direction modes produces the Stop mode after a few seconds due to absence of the reel sensor output.

2.1.3 Manual removal of loaded tape

In event of failure which leaves the tape in the loaded position, remove it by the following procedure.

1) Take off the top cover and main deck assy in order to wind the tape on the reel.
See Sec.1 DISASSEMBLY.
2) Turn the mode motor belt by hand in the unloading direction to return the loading posts to the stop position, refer Fig.2-1-1.

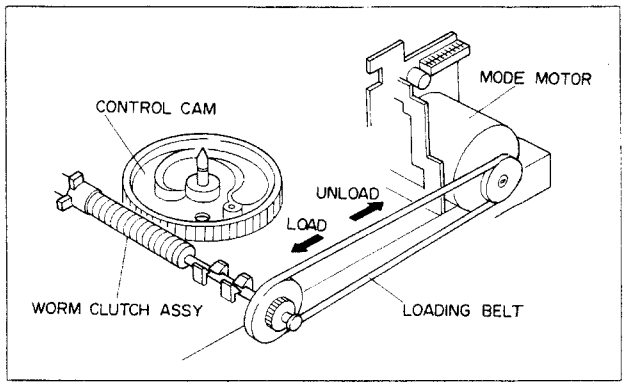


Fig. 2-1-1

3) From the bottom, turn the clutch unit by hand to wind the slackened tape onto the reel.

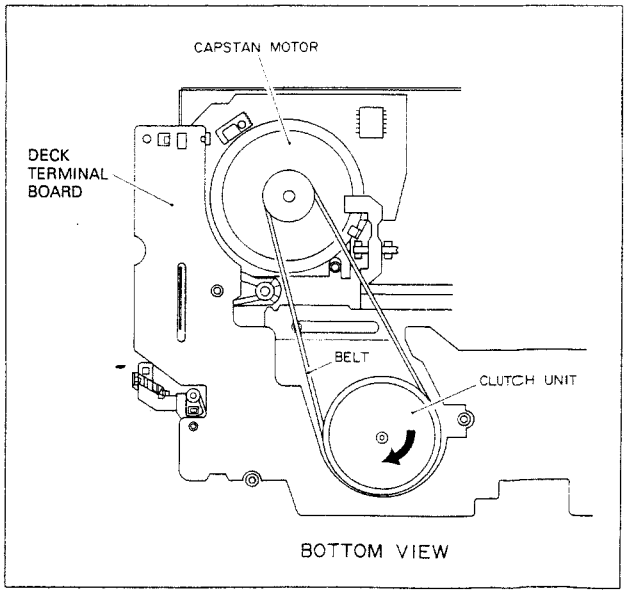


Fig. 2-1-2

4) Ture the mode motor further to where the cassette holder begins moving in the unloading direction, then remove the cassette tape.

Note: *Turn the mode motor and clutch unit alternately in order to avoid damaging the tape. It is important to avoid scratching the tape in the mechanism.*

2.1.4 Test equipment

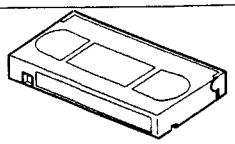
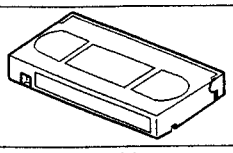
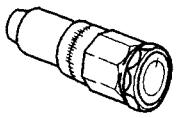
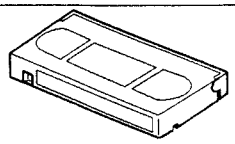
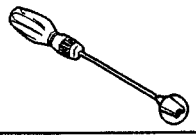
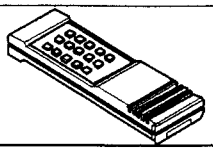
Alignment tape (SP) MH-1	Alignment tape (EP) MH-1L	Torque gauge PUJ48075-2	Back tension cassette gauge PUJ48076-2
			
A/C head positioning tool PTU94010	**Roller driver PTU94002**	**Presetting unit PTU94008**	
			

Table 2-1-1

2.2 MAIN MECHANISM PARTS

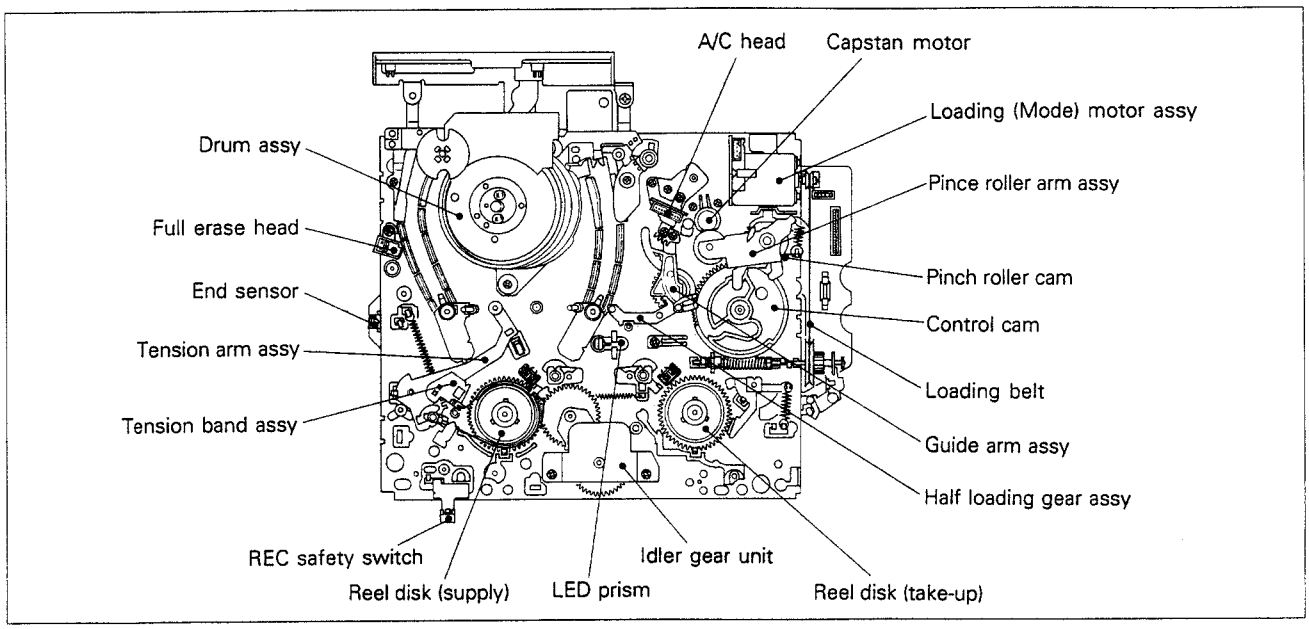


Fig. 2-2-1 Top view of main-deck

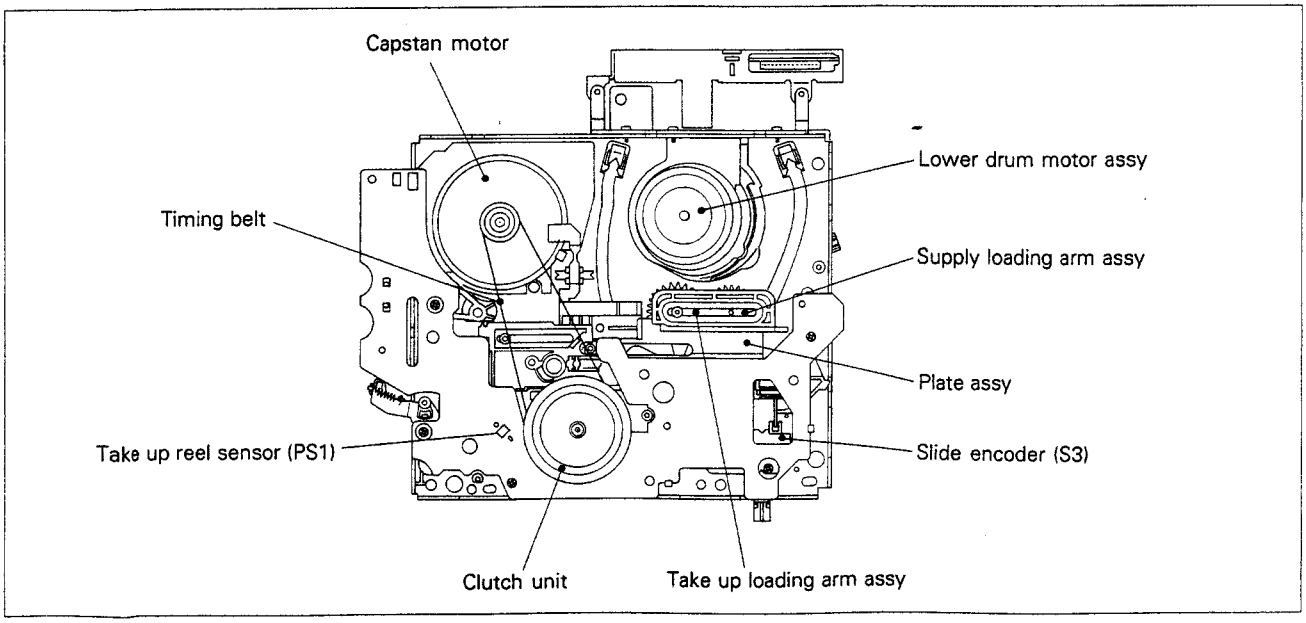


Fig. 2-2-2 Bottom view of main-deck

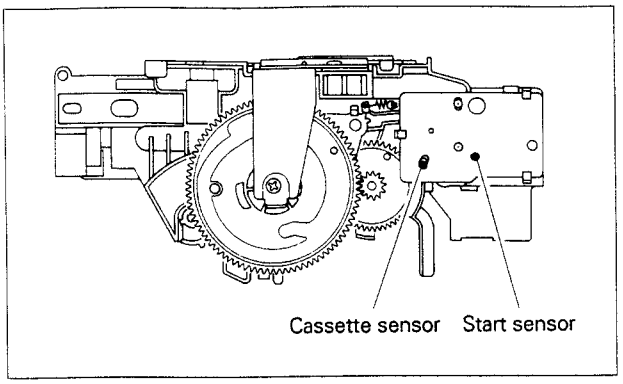


Fig. 2-2-3 Side view of cassette housing

2.2.1 Cleaning

Periodic cleaning of the tape transport system is desirable, but ordinarily not feasible in practice. Therefore, perform cleaning when a set is brought in for repairs or maintenance. Contamination of the video heads, tape guides and brushes can detract from playback picture quality and in extreme cases, even damage the tape. For cleaning, use a fine-mesh cotton cloth (about the texture of a white dress-shirt) moistened in alcohol.

- To clean the video heads, press the moistened cloth gently against the upper drum with finger-tip and turn the drum by hand.
- Do not use a vertical stroke, as this may damage the heads.

2.2.2 Lubrication

Oil and grease do not normally require periodic replenshing. Apply only when replacing lubricated parts (also clean and replace lubrication of mating parts if soiled).
For parts and points to apply oil and grease, refer to the exploded views of the mechanism assembly.
Before oiling, clean with alcohol.
Apply one or two drops of oil.
Avoid excess oil.

1) Table 2-2-1 indicates the oil and grease used in this set. Use these or recommended locally available equivalents.

Category	Part No.
Oil	COSMO-HV56
Grease	KANTO-G-31KAV

Table 2-2-1

2) Grease is not required for a replacement cassette housing assembly, as this has been applied at the factory.

Note: *Stir grease that has been stored for an extended period.*

2.3 INSPECTION AND MAINTENANCE

This product employs rotary and moving parts which wear out in the course of usage. Periodic inspection, cleaning, lubrication and maintenance are therefore important for ensuring maximum performance. Worn parts must also be replaced at when required.

2.3.1 Suggested servicing schedule for main components

The following table indicates the suggested period for such service measures as cleaning, lubrication and replacement. In practice, the indicated periods will vary widely according to environmental and usage conditions. However, the indicated components should be inspected when a set is brought for service and the maintenance work performed if necessary.
Also note that rubber parts may deform in time, even if the set is not used.

System	Parts Name	Operation hours						
		250	500	750	1000	1250	1500	2000
Tape Transport	Upper drum assy	★	★	★	○	★	○	○
	A/C head	★			○			○
	Pinch roller arm assy	★	★	★	★	★	★	★
	Full erase head							
	Tension arm assy							
	Lower drum motor assy							
	Capstan motor (Shaft)							
	Half loading gear assy							
	Guide arm assy							
Drive	Capstan motor							○
	Loading belt			○				○
	Mode motor assy			○				○
	Reel disk (Supply)			○				○
	Reel disk (Take-up)			○				○
	Clutch assy			○				○
	Worm clutch assy							○
	Plate assy							○
Others	Brush assy			○				○
	Tension band assy			○				○

★ : Cleaning
○ : Inspection or Replacement if necessary

Table 2-3-1

2.4 MAIN PARTS REPLACEMENT AND ADJUSTMENT

2.4.1 Drum assembly

Work with extreme care when removing or replacing the drum assembly. Do not touch the video heads during servicing.

1) Open the Top Cover.
2) Remove the WASHER, HEAD CLEANER ASSY and INERTIA PLATE.
3) Take out 3 screws, then disconnect a connector. See Fig.2-4-1.

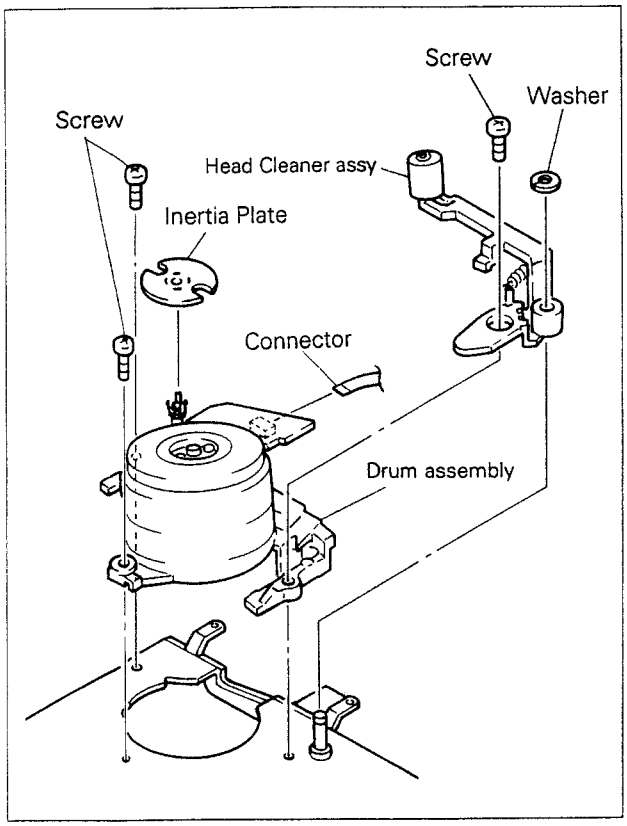


Fig. 2-4-1

Notes:
- *After replacement of the drum assembly the following checks and adjustments have to be performed:*
  -Video head switching point
  -Tape interchangeability adjustment
  -Recording color level
- *Drum assembly is replaced as complete unit, without attempting to repair or adjust it internally.*

2.4.2 Tension arm positioning

1) Remove the cassette housing, set the playback mode. (Refer to 2.1.2 Check without cassette housing)
2) Tuner the eccentric adjust pin to position the mark of the chassis with the tension arm tip as shown Fig.2-4-2.

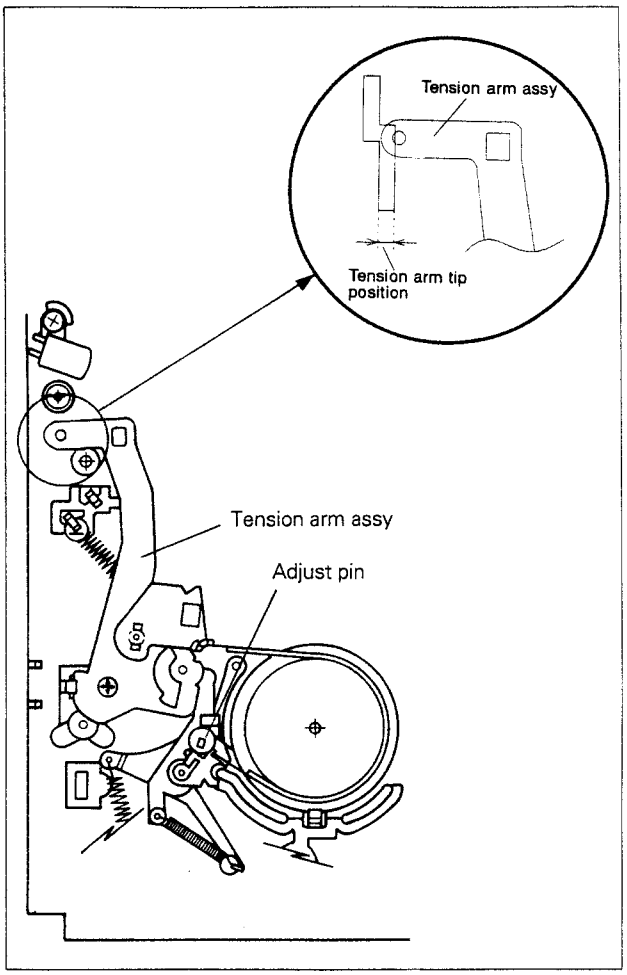


Fig. 2-4-2

Note: *Normally, if the tension post position is properly adjusted, the back tension will assume the correct value. Use the back tension cassette gauge and confirm playback tension is 35g-cm to 48g-cm (13.8g- inch to 18.9g-inch).*

2.4.3 Pinch roller cam position

1) Set the mechanism to the eject mode (cassette holder is locked in eject position).
2) Install the pinch roller cam so the largest hole near the gear teeth is aligned with the hole on the chassis.
3) Set the control cam on the deck with the hole in the groove aligned with the hole on the chassis. Observe that the small hole on the control cam and the mark on the pinch roller cam are aligned. (If the control cam does not fit readily, shift the loading arm and plate assembly within the range of mechanical play.)
4) Install the half-loading gear assembly with the hole aligned with the hole on the chassis. Secure with split washer.
5) Install the guide arm assembly with the hole aligned with hole on the chassis. Engage the spring properly.

Note: ***This is the correct mechanical alignment to install the cassette housing. The cassette housing should also be in the eject position.***

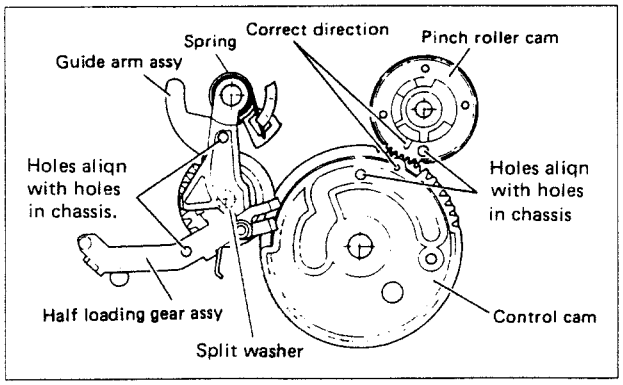


Fig. 2-4-3

2.4.4 Audio/control head height

1) Adjust the 3 screws (screw ①,②,③ in Fig. 2-5-1) to set the audio/control head height to 6.6 mm (0.26 in). Adjust all screws equally.
2) Perform interchangeability adjustments to obtain the specified control pulse and audio signal levels.

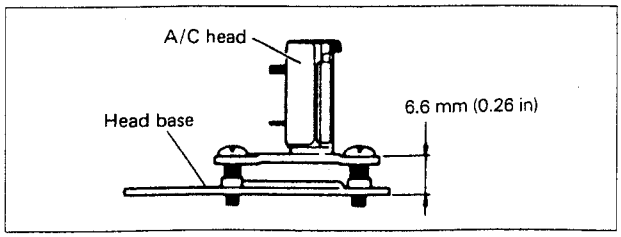


Fig. 2-4-4

Notes:
- ***It is very important to correctly adjust the control pulse and audio signal in addition to the mechanical tape path.***
- ***Perform interchangeability adjustments after electrical adjustments.***

2.4.5 Loading arm and plate assembly position

1) Set for Eject mode and remove the deck terminal board.
2) Check that the preset hole of the plate assembly is in the preset position. Temporarily insert a 3 mm (0.12 in) screw to hold the position.
3) By hand, hold the loading arms in the unloading (inner) position and set the plate assembly from above.
4) Install Red and White split washers. Remove temporary screw.
5) Move the mode motor belt by hand and confirm mechanism operation.

Note: ***Observe that the brake assembly pin is engaged with the plate assembly groove.***

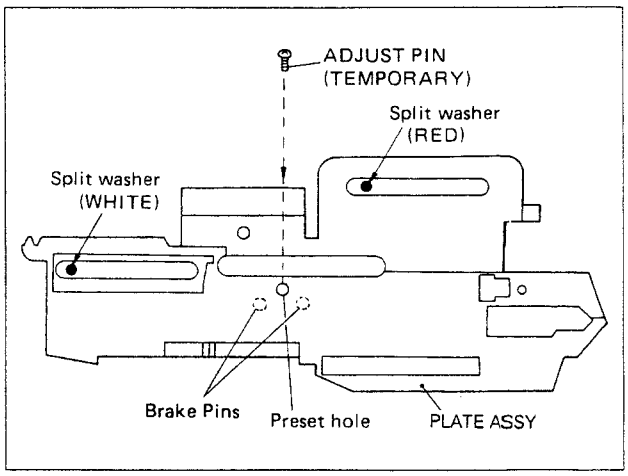


Fig. 2-4-5

2.4.6 Reel disk height

1) Measure the height of the reel disk above the main chassis.
2) Add or remove washers at the bottom of the reel disk to adjust for 12 mm (0.47 in). See Fig.2-4-6.

Note: ***This adjustment is normally not needed. Perform after replacing the reel disk.***

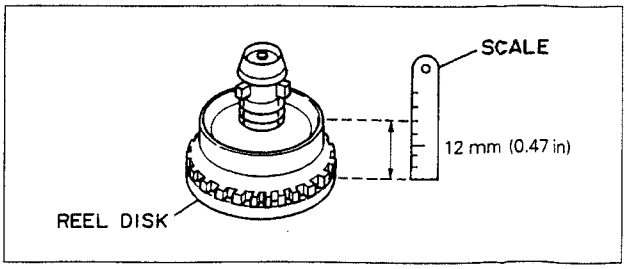


Fig. 2-4-6

2.5 TAPE INTERCHANGEABILITY ADJUSTMENT

Note: *This adjustment is extremely important. However, it is normally not required during routine service. Perform only after replacing major components (A/C head, drum assembly, etc.).*

2.5.1 Height and azimuth adjustment of A/C head

1) Connect the oscilloscope to the audio output jack on the rear of the deck.
2) Play back the stairstep portion (6 kHz, Mono) of the alignment tape.
3) Adjust Black Screw ② on the head base in Fig. 2-5-1 so that the output level is at a maximum.
4) Readjust Screw ① shown in Fig.2-5-1 for maximum output.

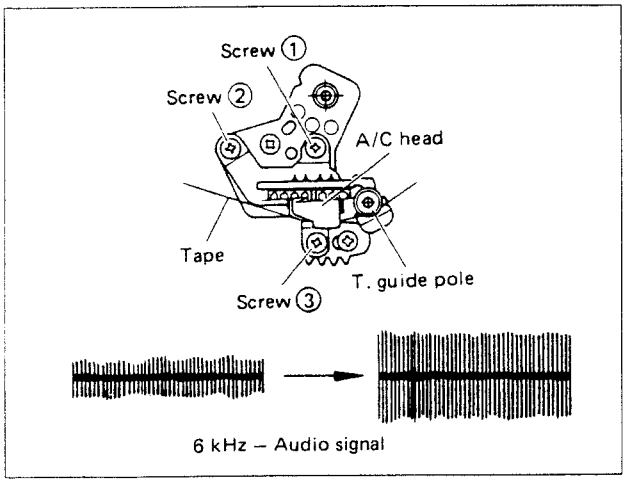


Fig. 2-5-1

2.5.2 Horizontal Position adjustment of A/C head

1) Play back the stairstep portion of the alignment tape.
2) Connect the oscilloscope to TP506 (PB FM) on the PRE/AMP board. Use TP511 (DRUM FF) as a trigger. Confirm that the RF envelope appears, as in Fig.2-5-4.
3) Set the neutral manual tracking position, by simultaneously press of the (+) and (-) tracking buttons.
4) If adjustment is required, slightly loosen screws ④ and ⑤. Set A/C head positioning tool on the A/C head adjusting boss as shown in Fig.2-5-2.
5) Turn the tool first to position the A/C head fully toward the capstan. Then gradually return it toward the durm and stop at the position of maximum FM waveform output level as shown in Fig.2-5-4.
6) Tighten screw ⑤. Remove the tool and tighten screw ④.
7) Eject the tape and then re-insert again. Playback the Alignment Tape. Set the neutral manual tracking position. Push the tracking (+) button (count the number of pushes) until the maximum RF envelope is reduced to 1/2. Eject the tape and re-insert it again. Playback the Alignment Tape. Set the neutral manual tracking position. Push the tracking (-) button (count the number of pushes) until the maximum RF envelope is reduced to 1/2.
8) Confirm that the number of pushes are equal.

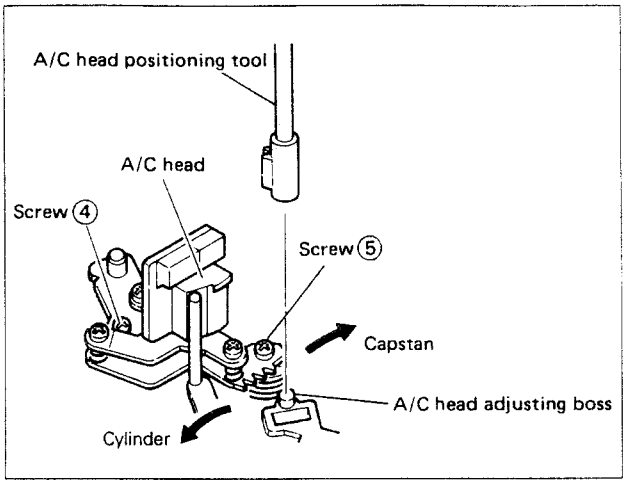


Fig. 2-5-2

2.5.3 Playback tracking

This is the most important adjustment. If incorrect, proper tracking will not be obtained in recording and blayback.
Other problems that may occur are noise in parts of the picture, poor color reproduction and picture instability.

1) Play back the stairstep portion of the alignment tape.
2) Connect the oscilloscope to TP506 (PB FM) on the PRE/AMP board. Use TP511 (DRUM FF) as a trigger. Confirm that the RF envelope appears, as in Fig.2-5-4.
3) Operate the tracking adjustment (press the tracking buttons during playback) and set for maximum playback RF envelope waveform.
4) If adjustment is required, first slightly loosen the set screw located at the bottom of the guide rollers. Using the guide roller adjustment tool, adjust the supply and take-up guide rollers (refer to Fig.2-5-3) to obtain the correct waveform. Refer to Fig.2-5-5.

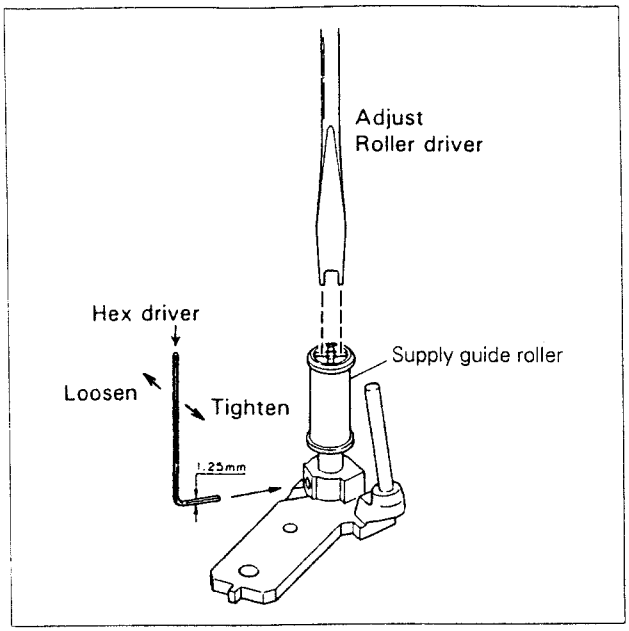


Fig. 2-5-3

5) By pushing the tracking buttons several times, vary the FM waveform output from maximum to minimum (and vice versa) gradually, and confirm that the variation proceeds in a flat shape, as in Fig.2-5-6.
6) If the FM waveform varies and is not mostly flat, tweak the height of guide roller(s) until the RF waveform is as flat as possible.
7) Eject a tape and then playback tape again, since the height of guide rollers may move during adjustment. Confirm, when pushing the tracking (+) and (-) buttons, FM waveform variation is always flat.
8) After adjustment, confirm that the tape wrinkling does not occur at the roller upper or lower limits, as in Fig.2-5-7.
9) Perform step 2.5.1 and 2.5.2.

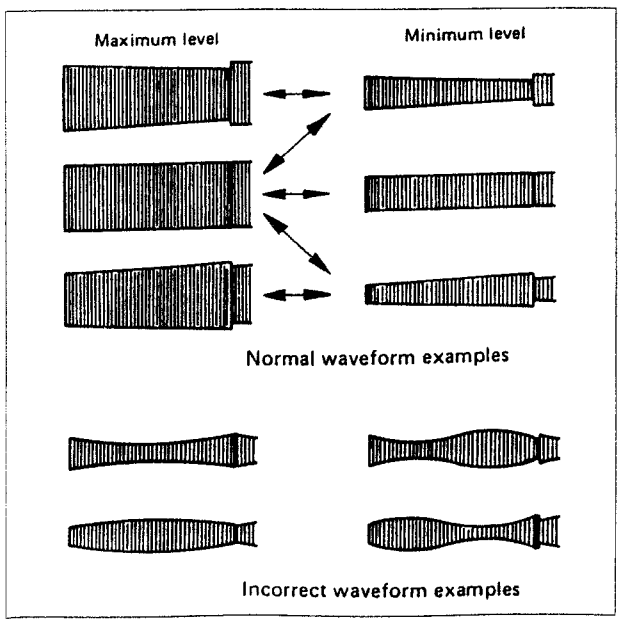


Fig. 2-5-4

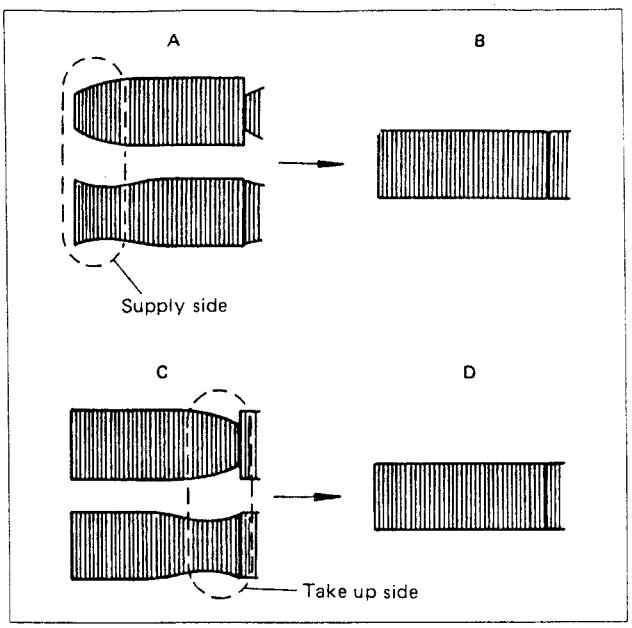


Fig. 2-5-5

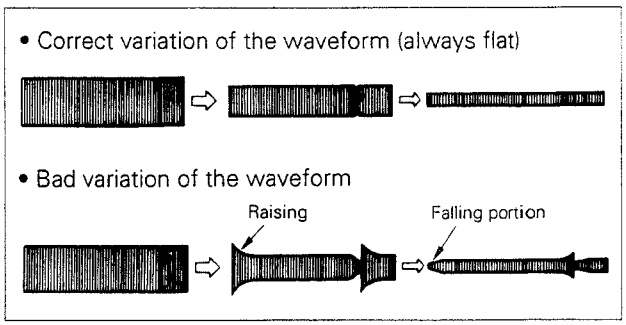


Fig. 2-5-6

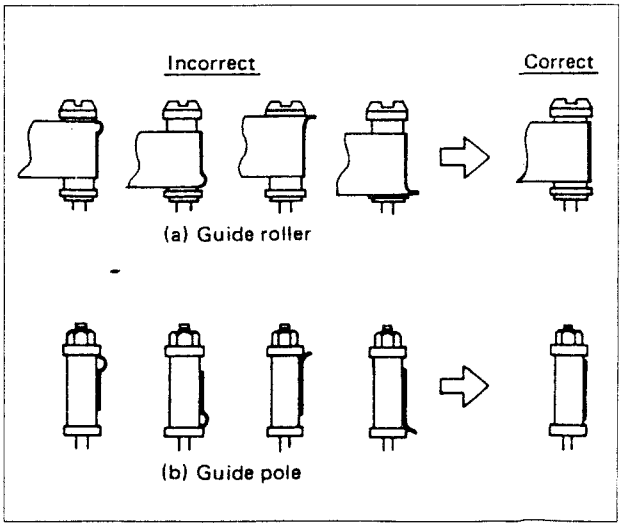


Fig. 2-5-7

SECTION 3
ELECTRICAL ADJUSTMENT

3.1 DECK SECTION ADJUSTMENT

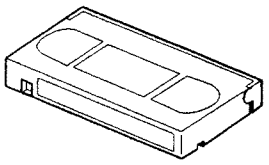
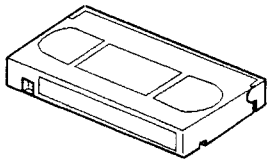
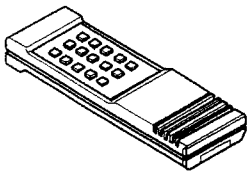
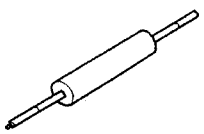
3.1.1 PRECAUTION

Electrical adjustments are required after replacing circuit components and certain mechanical parts. It is important to perform these adjustments only after all repairs and replacements have been completed. Also, do not attempt these adjustments unless the proper equipments is available.

1. Required test equipment

1. Color television or monitor.
2. Osciloscope: wide-band, dual-trace, triggered delayed sweep
3. Frequency counter
4. Digital voltmeter
5. Signal generator: NTSC color bar, stairstep
6. Recording tape

2. Required adjustment tools

Alignment tape (SP) MH-1	Alignment tape (EP) MH-1L
	
Presetting unit PTU94008	Adjustment driver YTU93004-2
	
∗SMC replacement tools YTU94038B	

∗ **Note:** *It is convenient for replacing chip parts.*

3. Color bar signal, color bar pattern and video sweep signal

● Color bar signal

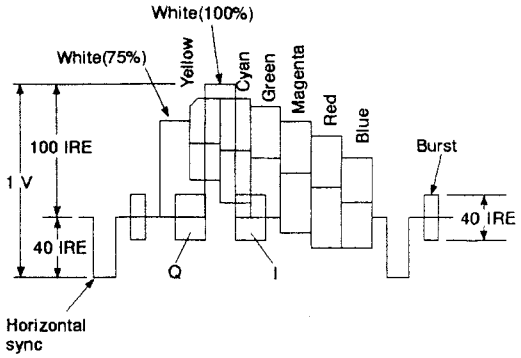


Fig. 3-1-1 Color bar signal waveform

● Color bar pattern

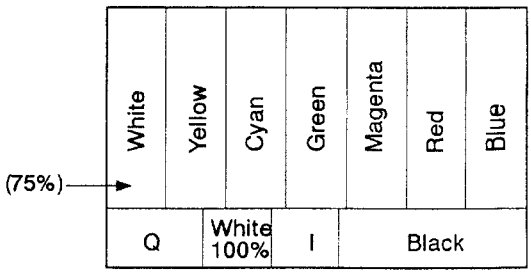


Fig. 3-1-2 Color bar pattern

● Video sweep signal

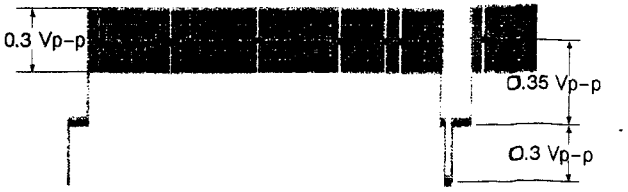


Fig. 3-1-3 Video sweep signal

3.1.2 SWITCHING REGULATOR CIRCUIT

Note: *Unless otherwise specified, all test points and adjustments are located on the MAIN BOARD.*

1. 5V DC output voltage

Signal	•TUNER
Mode	•SP •REC
Equipment	•Digital voltmeter
Measurement point	•Q802 Emitter (SWD 5 V) •Q803 Emitter (GND)
Adjustment Part	•R805 (SWD 5 V)
Specification	•5.2 ± 0.1 V DC

1) Connect a digital voltmeter to Q802 Emitter (SWD 5V) and Q803 Emitter (GND).
2) Adjust R805 for 5.2 ± 0.1 V DC.

3.1.3 SERVO CIRCUIT

Note: *Unless otherwise specified, all test points and adjustments are located on the MAIN BOARD.*

1. PB switching point

Signal	•Alignment tape (MH-1) •Stairstep
Mode	•PB •Digital tracking OFF
Equipment	•Oscilloscope
Measurement point	•TP210 (VIDEO OUT)
Trigger slope (-)	•TP511 (DRUM FF) (HEAD AMP BOARD.)
Adjustment Tool	•Presetting unit [PTU94008]
Specification	•6.5 ± 0.5 H

Note: *Set VCR to the mode A by remote controller.*

1) Connect an oscilloscope to TP210 and TP511.
2) Playback the stairstep signal of the alignment tape.
3) Set the tracking control to the center position by simultaneously pressing the (+) or (-) buttons.
4) Adjust by pressing "B" (+) or "C" (-) buttons of presetting unit for position the trigger point 6.5 ± 0.5 H from V.sync.

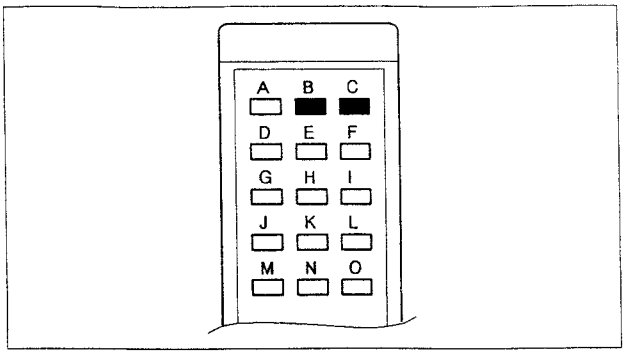


Fig. 3-1-4 Presetting unit

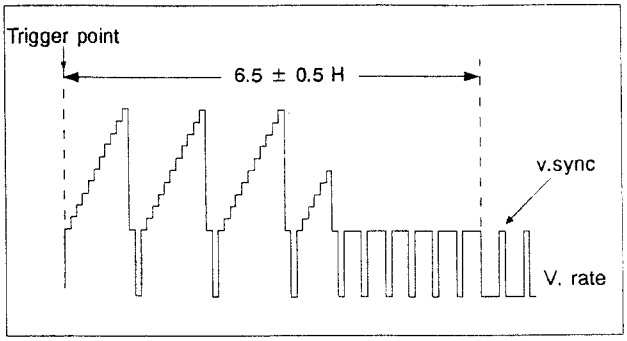


Fig. 3-1-5 PB switching point

2. Slow tracking preset

Signal	•Color bar
Model	•SP/EP •REC → PB (SLOW) •Digital tracking OFF
Equipment	•TV-Monitor
Adjustment Tool	•Presetting unit [PTU94008]
Specification	•Mimimum noise

Note: *Set VCR to the mode A by remote controller.*

1) Record a color bar signal in the SP mode.
2) Playback recorded signal on the FWD slow mode.
3) Set the tracking control to the center position by simultaneously pressing the (+) or (-) buttons.
4) Observe the display on a TV monitor and adjust for optimum noise condition (best tracking) by depressing "B" (+) or "C" (-) buttons of presetting unit as required.
5) Depress the STOP button.
6) Confirm that the bar noise is not visible on the monitor in the slow mode.
7) Repeat steps 2) to 6) in REV slow mode.
8) Repeat steps 1) to 7) in EP mode.

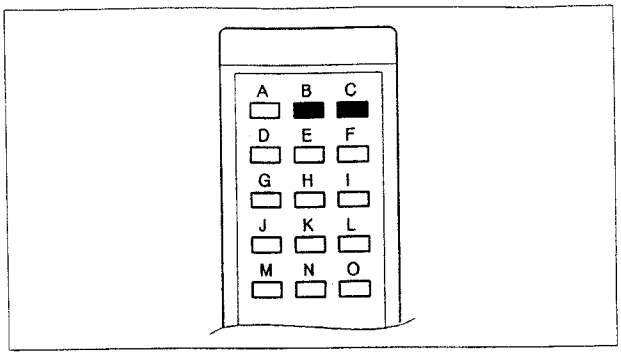


Fig. 3-1-6 Presetting unit

3.1.4 VIDEO CIRCUIT

Note: *Unless otherwise specified, all test points and adjustments are located on the VIDEO UNIT BOARD.*

Important:

Item 1. thru 6..

1) Ordinarily performing thses adjustments is not required. Adjustments should be performed only if IC1 on the VIDEO UNIT BOARD has been replaced.
2) To adjust, replace fixed resistor with variable chip resistor, then adjust as required.

1. EE Y level

Signal	•Color bar
Mode	•EE
Equipment	•Oscilloscope
Measurement point	•TP210 (VIDEO OUT) (MAIN BOARD)
Adjustment Part	•R43 (EE Y LEVEL)
Specification	•2.00 ± 0.06 Vp-p (Unterminated)

1) Connect an oscilloscope to TP210.
2) Confirm that Y level is 2.00 ± 0.06 Vp-p. Unterminated.
3) If necessary, replace R43 with the variable chip resistor NVP1301-153N and adjust it for 2.00 ± 0.06 Vp-p, as in Fig.3-1-7.

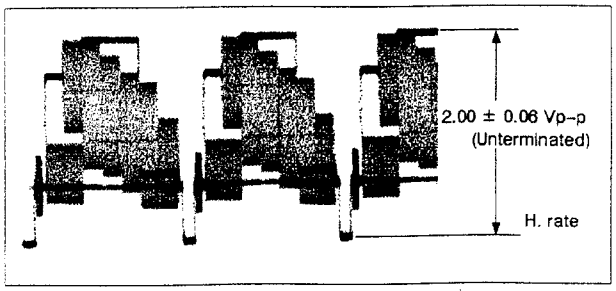


Fig. 3-1-7 EE Y level

2. White clip

Signal	•Color bar
Model	•EE
Equipment	•Oscilloscope
Measurement point	•IC1 pin 21
Adjustment Part	•R45 (WHITE CLIP)
Specification	•WHITE CLIP : 190 ± 4 % •DARK CLIP : 145 ± 8 %

1) Connect an oscilloscope to IC1 pin 21.
2) Confirm that white clip is 190 ± 4 % and dark clip is 145 ± 8 %.
3) If necessary, replace R45 with the variable chip resistor NVP1301-332N and adjust it 190 ± 4 % white clip and 145 ± 8 % dark clip, as in Fig.3-1-8.

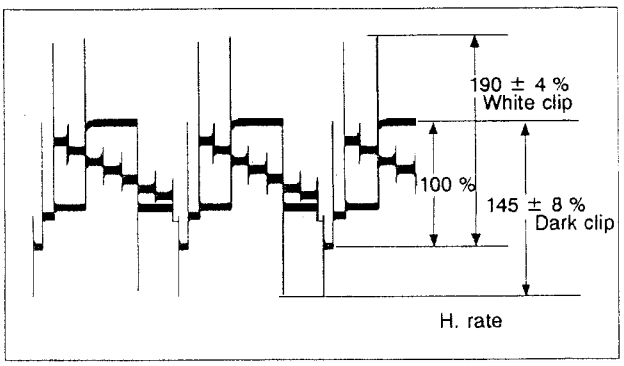


Fig. 3-1-8 White clip

3. Carrier & diviation

· Carrier

Signal	•No signal-VIDEO INPUT (Shorted RCA Phono Plug)
Mode	•EE
Equipment	•Frequency counter
Measurement point	•CN2 pin 1
Adjustment Part	•R23 (CARRIER)
Specification	•3.45 MHz ± 40 kHz

1) Connect a frequency counter to CN2 pin 1.
2) Confirm that frequency is 3.45 MHz ± 40 kHz.
3) If necessary, replace R23 with the variable chip resistor NVP1301-223N and adjust it for 3.45 MHz ± 40 kHz.

· **Deviation**

Signal	·Color bar
Mode	·REC then PB
Equipment	·Oscilloscope
Measurement point	·TP210 (VIDEO OUT) (MAIN BOARD)
Adjustment Part	·R24 (DEVIATION)
Specification	·2.00 ± 0.06 Vp-p (Unterminated)

4) Record and playback a color bar signal.
5) Confirm that Y level is 2.00 ± 0.06 Vp-p unterminated.
6) If necessary, replace R24 with the variable chip resistor NVP1301-103N and adjust it for 2.00 ± 0.06 Vp-p, as in Fig.3-1-9.

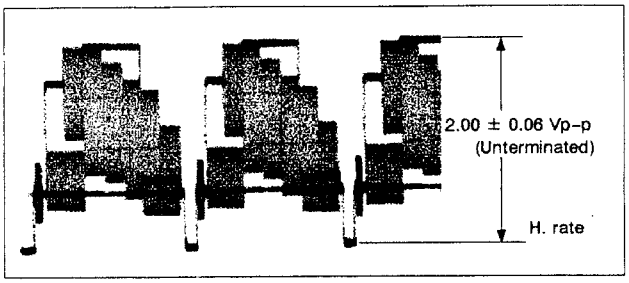


Fig. 3-1-9 Carrier & diviation

4. YNR level

Signal	·Color bar
Mode	·EE
Equipment	·Oscilloscope
Measurement point	·IC1 pin 9
Adjustment Part	·R36 (YNR LEVEL)
Specification	·Mimimum DC step difference

1) Connect an oscilloscope to IC1 pin 9.
2) Confirm that DC step difference is minimum.
3) If necessary, replace R36 with the variable resistor NVP1301-222N and adjust it for minimum DC step difference, as in Fig.3-1-10.

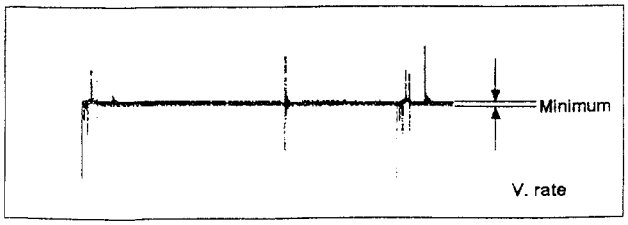


Fig. 3-1-10 YNR level

5. PB Y level

Signal	·Color bar
Mode	·SP ·REC then PB
Equipment	·Oscilloscope
Measurement point	·TP210 (VIDEO OUT) (MAIN BOARD.)
Adjustment Part	·R11 (PB Y LEVEL)
Specification	·2.00 ± 0.06 Vp-p (Unterminated)

Note: *Confirm that procedure 3.1.4-2. is correct before performing this adjustment procedure.*

1) Connect an oscilloscope to TP210.
2) Record and playbck a clolor bar signal.
3) Confirm that Y level is 2.00 ± 0.06 Vp-p unterminated.
4) If necessary, replace R11 with the variable resistor NVP1301-332N and adjust it for 2.00 ± 0.06 Vp-p, as in Fig.3-1-11.

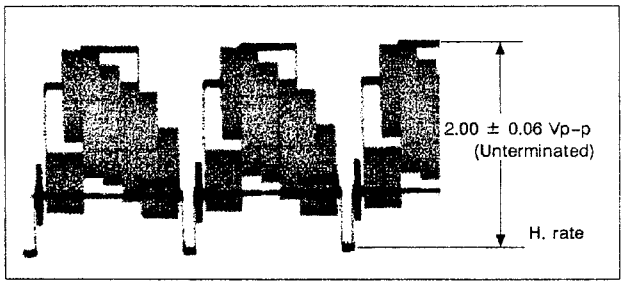


Fig. 3-1-11 PB Y level

6. REC color level

Signal	·Color bar
Mode	·SP ·REC
Equipment	·Oscilloscope
Measurement point	·TP505 (REC COLOR) (HEAD AMP BOARD)
Adjustment Part	·R55 (REC COLOR LEVEL)
Specification	·125 ± 10 mVp-p

1) Connect an oscilloscope to TP505.
2) Record the color bar signal in SP mode.
3) Confirm that color level is 125 ± 10 mV p-p, as in Fig. 3-1-12.
4) If necessary, replace R55 with the variable resistor NVP1301-103N and adjust it for 125 ± 10 mVp-p.

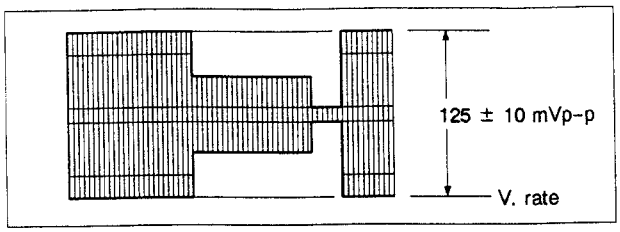


Fig. 3-1-12 REC color level

3.1.5 On screen circuit

Note: *Unless otherwise specified, all test points and adjustment parts are located on the MAIN BOARD.*

1. AFC clock

Note: *For the following adjustments, use 1 : 1 probe with input capacitance less than 100 pF.*

Signal	•No signal
Mode	•EE •AUX
Equipment	•Frequency counter
Measurement point	•TP901 (Fh)
Adjustment Part	•R904 (Fh)
Specification	•15.73 ± 0.05 kHz

1) Connect a frequency counter to TP901 and GND.
2) Adjust R904 for 15.73 ± 0.05 kHz.

2. DOT clock

Signal	•No signal
Mode	•EE
Equipment	•TV-Monitor
Adjustment Tool	•Presetting unit (PTU94008)
Specification	•Character center

1) Push the 'FAMILY MESSAGE' button and display the on-screen character.
2) Observe monitor-TV and center the position of character, by depressing "H" button on presetting.

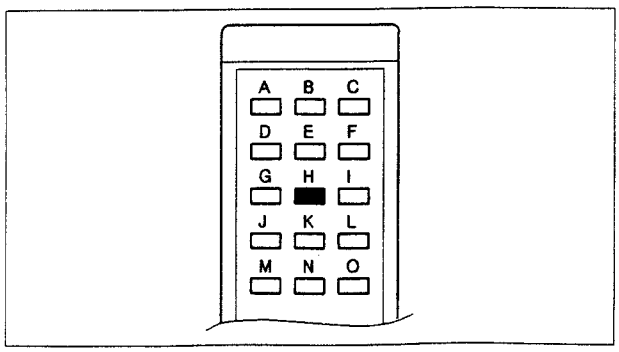


Fig. 3-1-13 Presetting unit

SECTION 4
CHARTS AND DIAGRAMS

SCHEMATIC DIAGRAM NOTES

Safety precautions

The Components identified by the symbol ⚠ are critical for safety. For continued safety, replace safety critical components only with manufactures recommended parts.

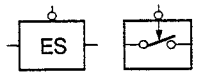
1. Schematic diagram values

Unless otherwise specified.

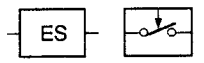
1) All resistance values are in ohms. 1/6 W, 1/8 W (refer to parts list).
   Chip resistors are 1/16 W.
   K: KΩ (1000Ω), M: MΩ (1000KΩ)
2) All capacitance values are in μF, (P: PF).
3) All inductance values in μH, (m: mH).
4) All diodes are 1SS133 or MA165, (refer to parts list).

2. Indications

AUX : Active only at high.
$\overline{AUX}$: Active only at low.

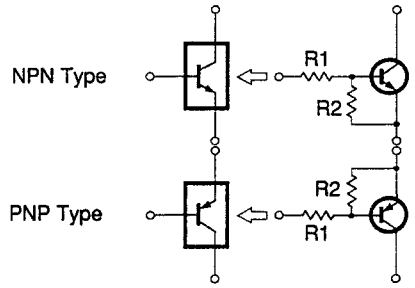


Active only at low for electronic switch.

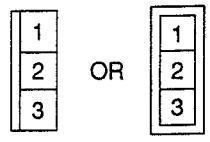


Active only at high for electronic switch.

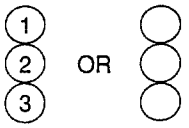
Digital transistor :
The digital transistor includes built in resistors.
It features small size and high reliability.



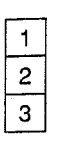
3. Interpreting Connector indications



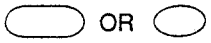
Removable connector



Direct connection on board



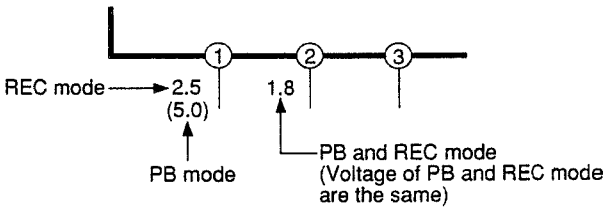
Non-removable Board connector



Connected pattern on board

4. Voltage measurement

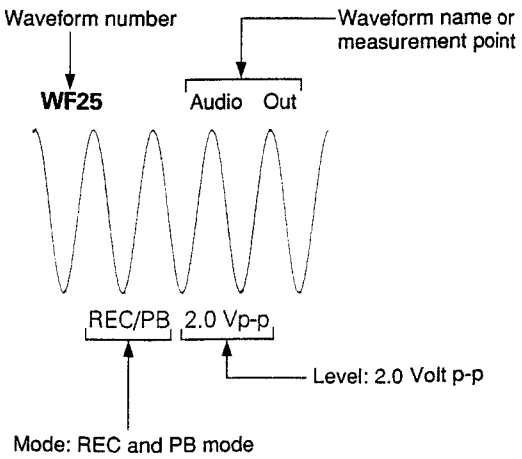
1) Voltage chart
   REC : Color bar signal in SP mode, normal VHS mode.
   PB : Alignment tape, color bar SP mode, normal VHS mode.
   — : Unmeasurable or unnecessary to measure.
2) Audio section
   REC : 1KHz, –8 dBs sine wave signal in SP mode, Normal VHS mode.
   PB : REC then playback it.
3) Movie Camera Section
   Measured as the grey scale pattern and color bar pattern which lighted up brightly is shot in the E-E mode.
4) Schematic diagram
   Voltage Indications for REC and PB mode on Schematic are as shown below.



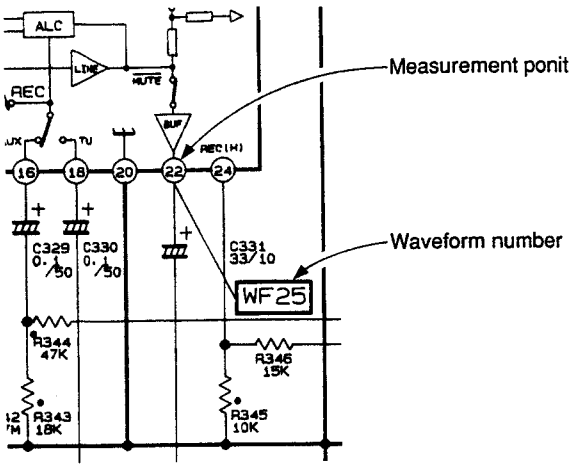
5. Waveform measurement

1) Waveform chart
   REC : Color bar signal in SP mode, normal VHS mode.
   PB : Alignment tape, color bar SP mode, normal VHS mode.
2) Audio Section
   REC : 1KHz, –8 dBs sine wave signal in SP mode, normal VHS mode.
   PB : REC then playback it.
3) Movie Camera Section
   Measured as the grey scale or color bar pattern which lighted up brightly is shot in the E-E mode.

Example:



4) Schematic diagram
Waveform indications on schematic are as shown below.



6. Signal path Symbols

The arrows indicate the signal path as follows.

- Playback signal path
- Playback and recording signal path
- Recording signal path (including E-E signal path)
- Y signal path
- Color (Chroma) signal path
- R or R-Y signal path
- B or B-Y signal path
- Capstan servo path
- Drum servo path
- Reel servo path

CIRCUIT BOARD NOTES

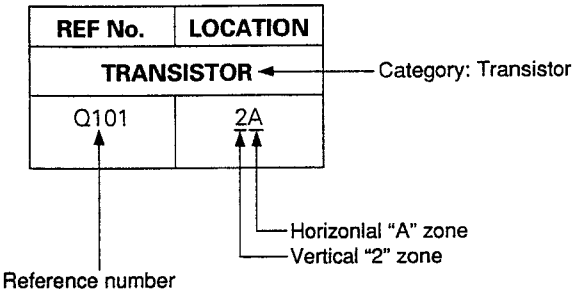
1. Color indications

1) Foil side :
Foil side patterns are indicated at gray shading.
2) Component side :
Component side patterns are indicated at RED shading.

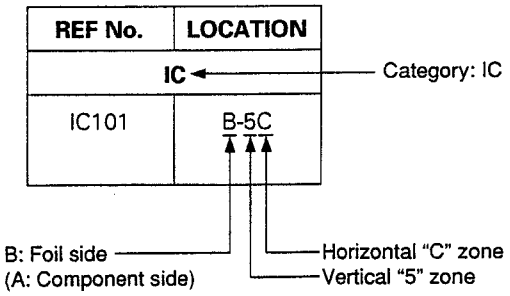
Notes:
Foil side (B side) ;
Parts on the foil side seen from foil face (pattern face) are indicated.
Component side (A side) ;
Parts on the component side seen from component face (parts face) are indicated.

2. Location of SMC indications

1) Single pattern :



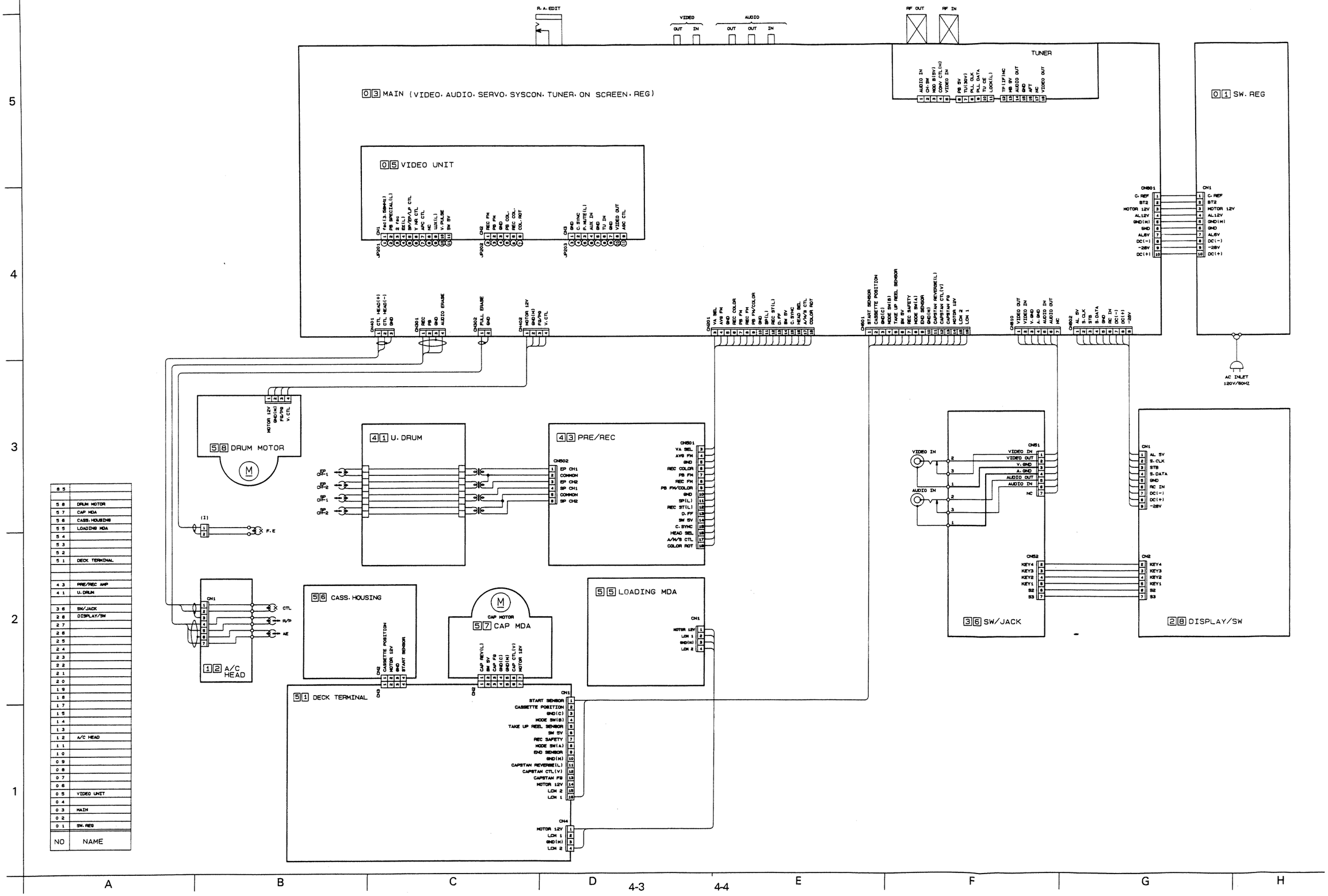
2) Double pattern :



Notes:
1) **For general information in service manual, please refer to the Service Manual of GENERAL INFORMATION No. 82054C (May 1991).**
2) **For repairing SMC (Surface Mounted Components), please refer to the VIDEO SERVICE GUIDE No. VTS81001.**

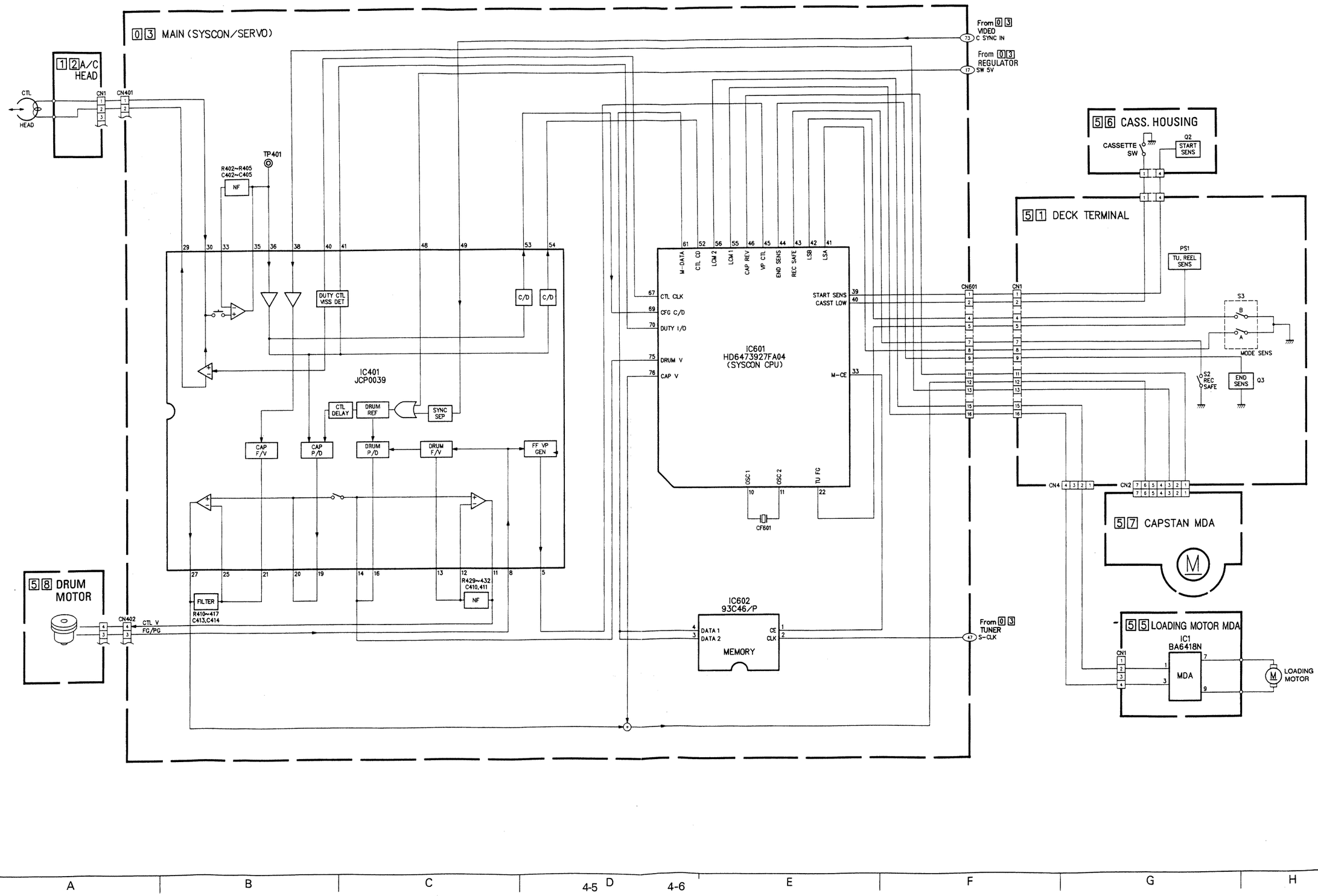
S40884

4.1 BOARD INTERCONNECTIONS

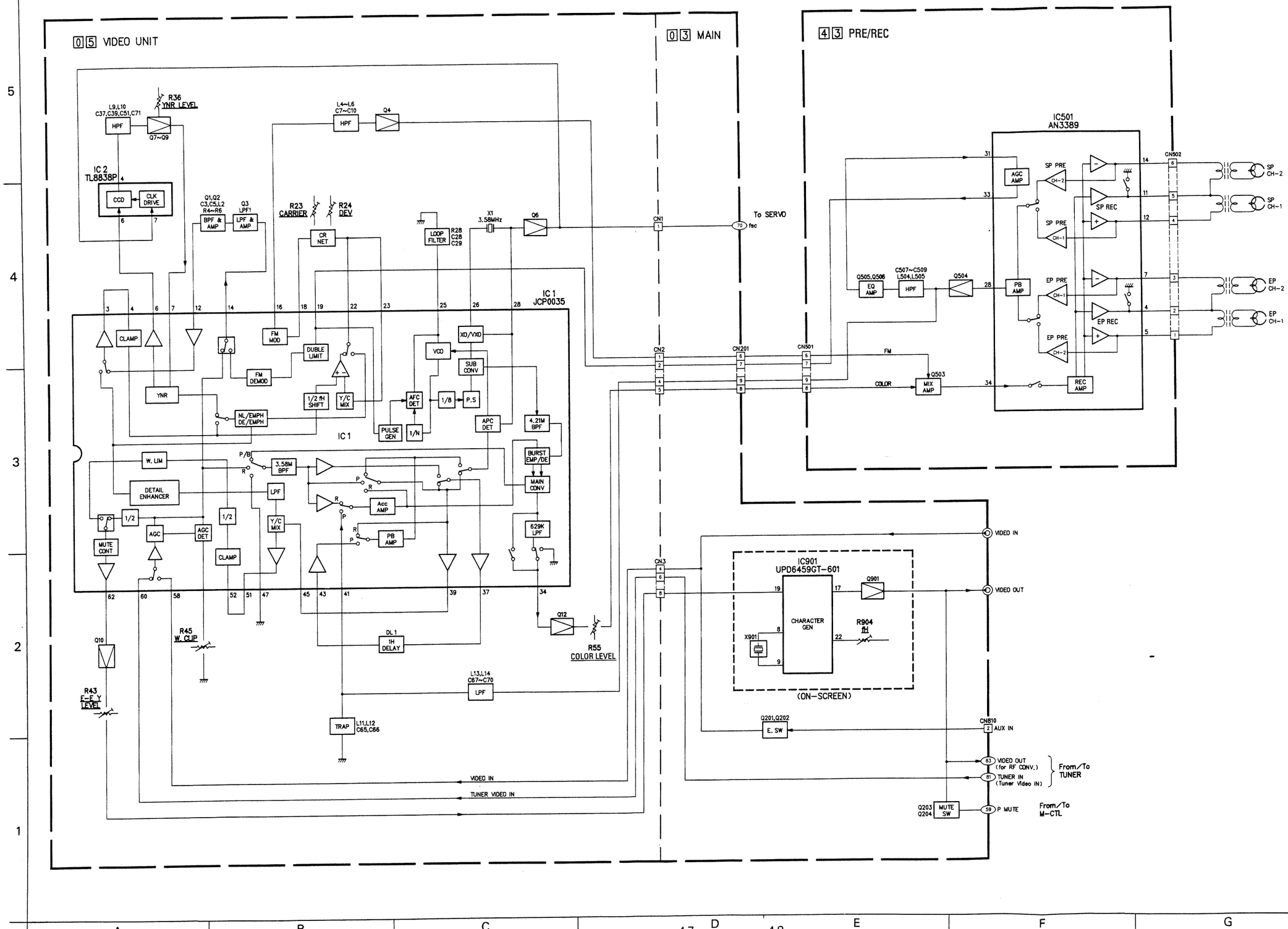


NO	NAME
85	
58	DRUM MOTOR
57	CAP MDA
56	CASS. HOUSING
55	LOADING MDA
54	
53	
52	
51	DECK TERMINAL
43	PRE/REC AMP
41	U. DRUM
36	SW/JACK
28	DISPLAY/SW
27	
26	
25	
24	
23	
22	
21	
20	
19	
18	
17	
16	
15	
14	
13	
12	A/C HEAD
11	
10	
09	
08	
07	
06	
05	VIDEO UNIT
04	
03	MAIN
02	
01	SW. REG

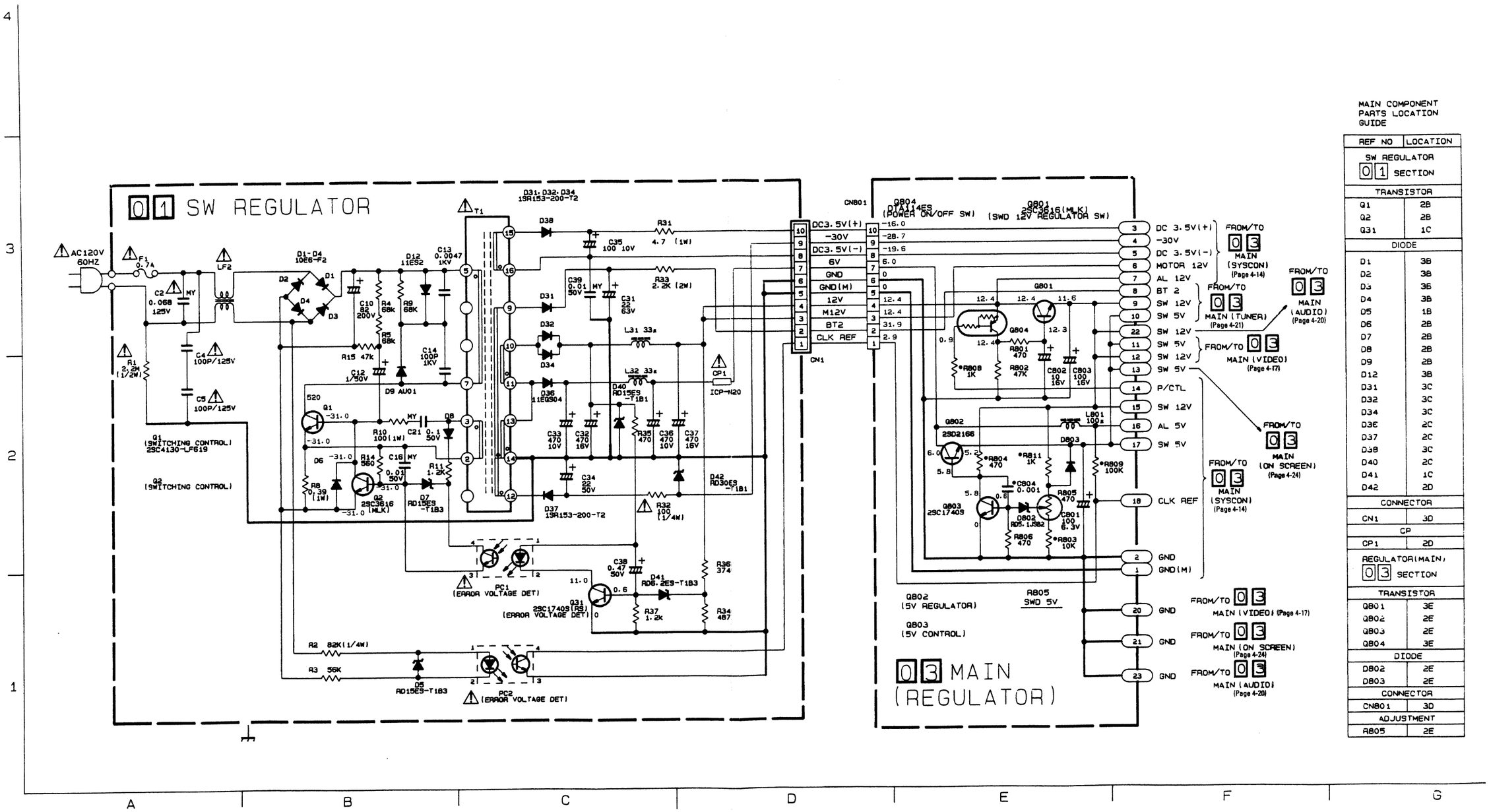
4.2 SYSCON/SERVO BLOCK DIAGRAM



4.3 VIDEO BLOCK DIAGRAM



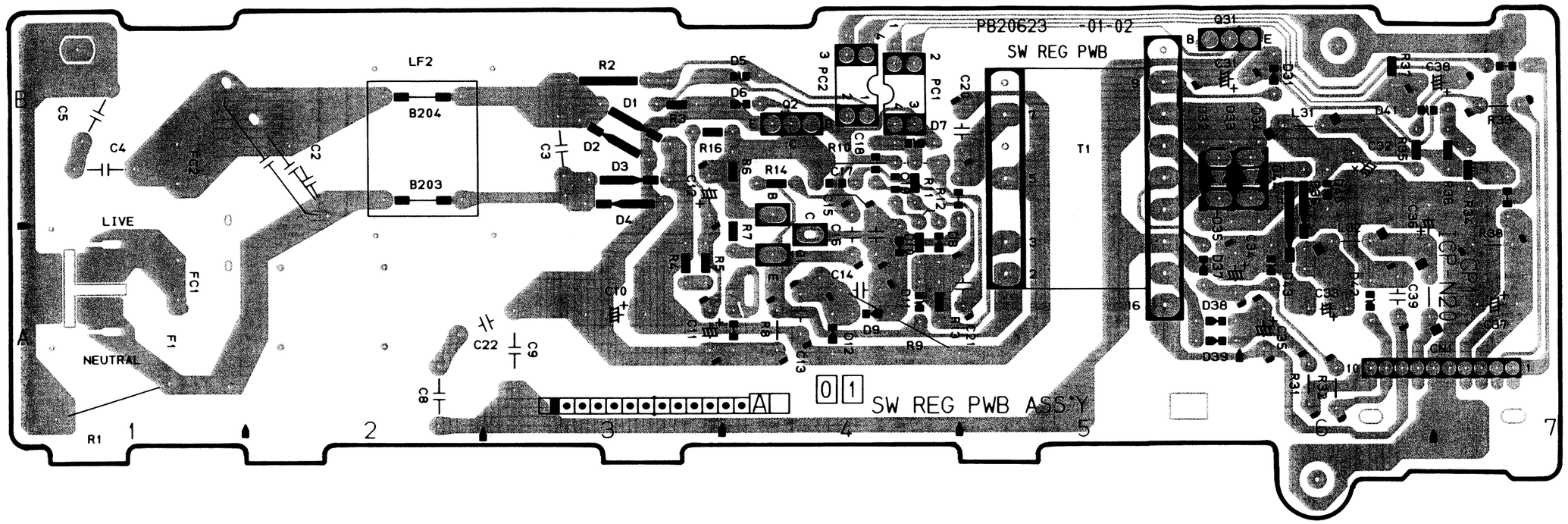
4.4 SWITCHING REGULATOR & MAIN (REGULATOR) SCHEMATIC DIAGRAM



MAIN COMPONENT PARTS LOCATION GUIDE

REF NO	LOCATION
SW REGULATOR 01 SECTION	
TRANSISTOR	
Q1	2B
Q2	2B
Q31	1C
DIODE	
D1	3B
D2	3B
D3	3B
D4	3B
D5	1B
D6	2B
D7	2B
D8	2B
D9	2B
D12	3B
D31	3C
D32	3C
D34	3C
D36	2C
D37	2C
D38	3C
D40	2C
D41	1C
D42	2D
CONNECTOR	
CN1	3D
CP	
CP1	2D
REGULATOR(MAIN) 03 SECTION	
TRANSISTOR	
Q801	3E
Q802	2E
Q803	2E
Q804	3E
DIODE	
D802	2E
D803	2E
CONNECTOR	
CN801	3D
ADJUSTMENT	
R805	2E

4.5 SWITCHING REGULATOR CIRCUIT BOARD

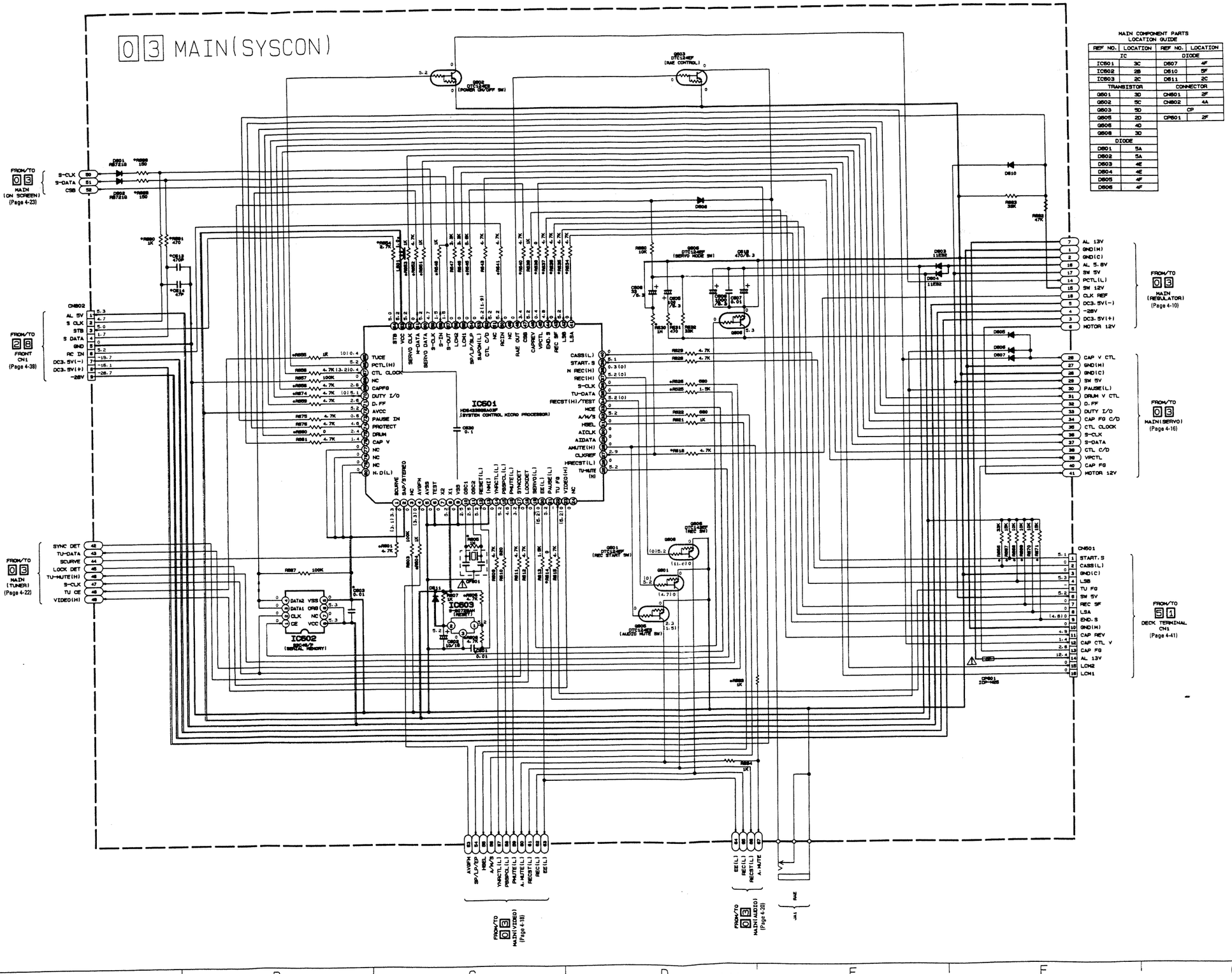


MAIN COMPONENT PARTS LOCATION GUIDE
<SW REG C.B.A.>

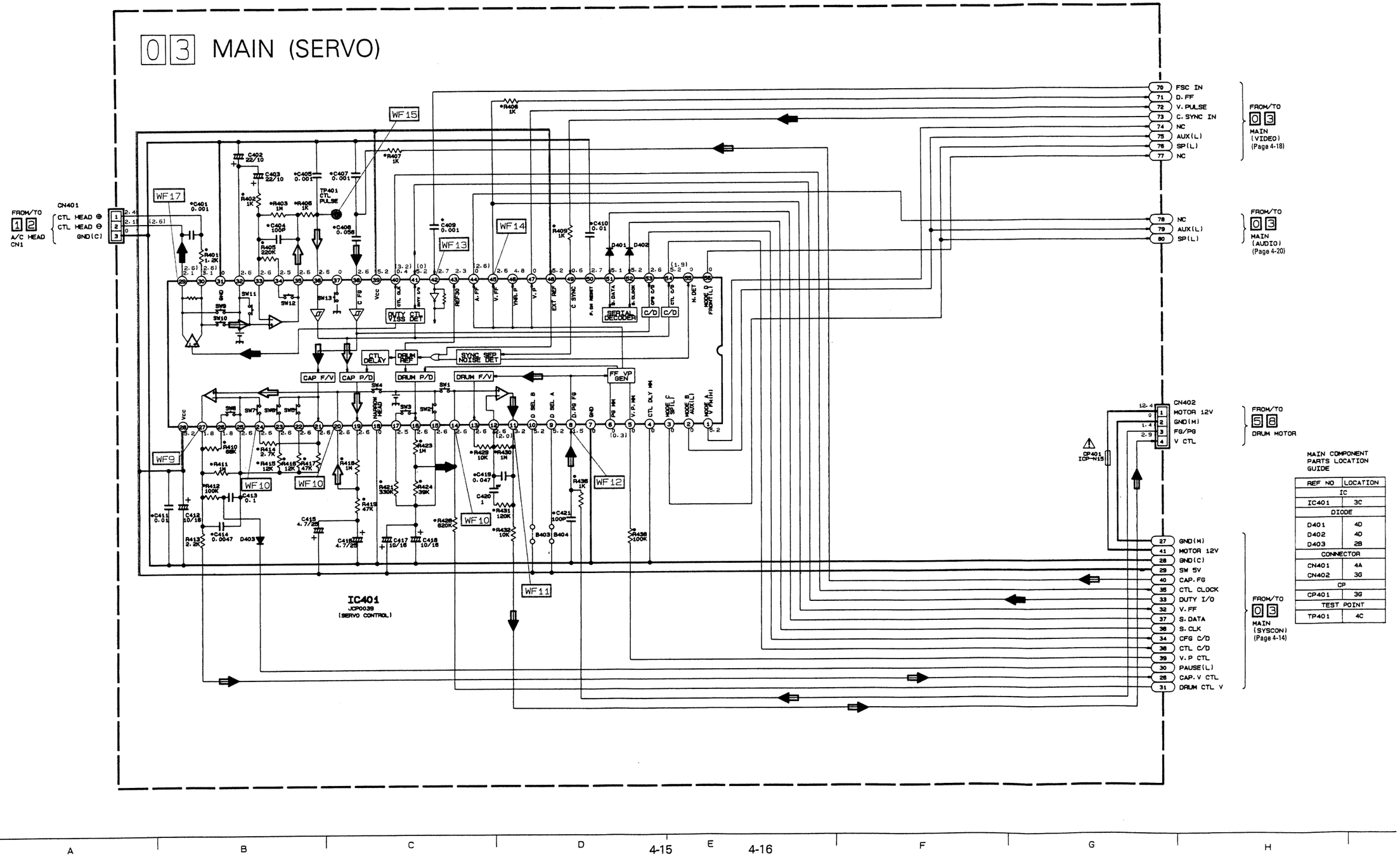
REF. No.	LOCATION
TRANSISTOR	
Q1	4A
Q2	4B
Q31	6B
DIODE	
D1	3B
D2	3B
D3	3B
D4	3B
D6	4B
D7	4B
D8	4A
D9	4A
D12	4A
D31	5B
D32	5B
D34	6B
D36	6B
D37	5A
D38	5A
D40	6B
D41	6B
D42	6A

REF. No.	LOCATION
CONNECTOR	
CN1	6A
CP	
CP1	7A

4.6 SYSTEM CONTROL SCHEMATIC DIAGRAM


03 MAIN(SYSCON)
IC601
M34283M8A03F
(SYSTEM CONTROL MICRO PROCESSOR)
IC602
(SERIAL MEMORY)
IC603
(RESET)
MAIN COMPONENT PARTS LOCATION GUIDE
REF NO. | LOCATION | REF NO. | LOCATION
IC: IC601 3C, IC602 2B, IC603 2C
TRANSISTOR: Q601 3D, Q602 5C, Q603 5D, Q605 2D, Q606 4D, Q608 3D
DIODE: D601 5A, D602 5A, D603 4E, D604 4E, D605 4F, D606 4F
DIODE: D607 4F, D610 5F, D611 2C
CONNECTOR: CN601 2F, CN602 4A
CP: CP601 2F
FROM/TO 03 MAIN (ON SCREEN) (Page 4-23)
FROM/TO 28 FRONT CN1 (Page 4-38)
FROM/TO 03 MAIN (REGULATOR) (Page 4-10)
FROM/TO 03 MAIN(SERVO) (Page 4-16)
FROM/TO 03 MAIN (TUNER) (Page 4-22)
FROM/TO 51 DECK TERMINAL CN1 (Page 4-41)
FROM/TO 03 MAIN(VIDEO) (Page 4-18)
FROM/TO 03 MAIN(AUDIO) (Page 4-20)
4-13
4-14

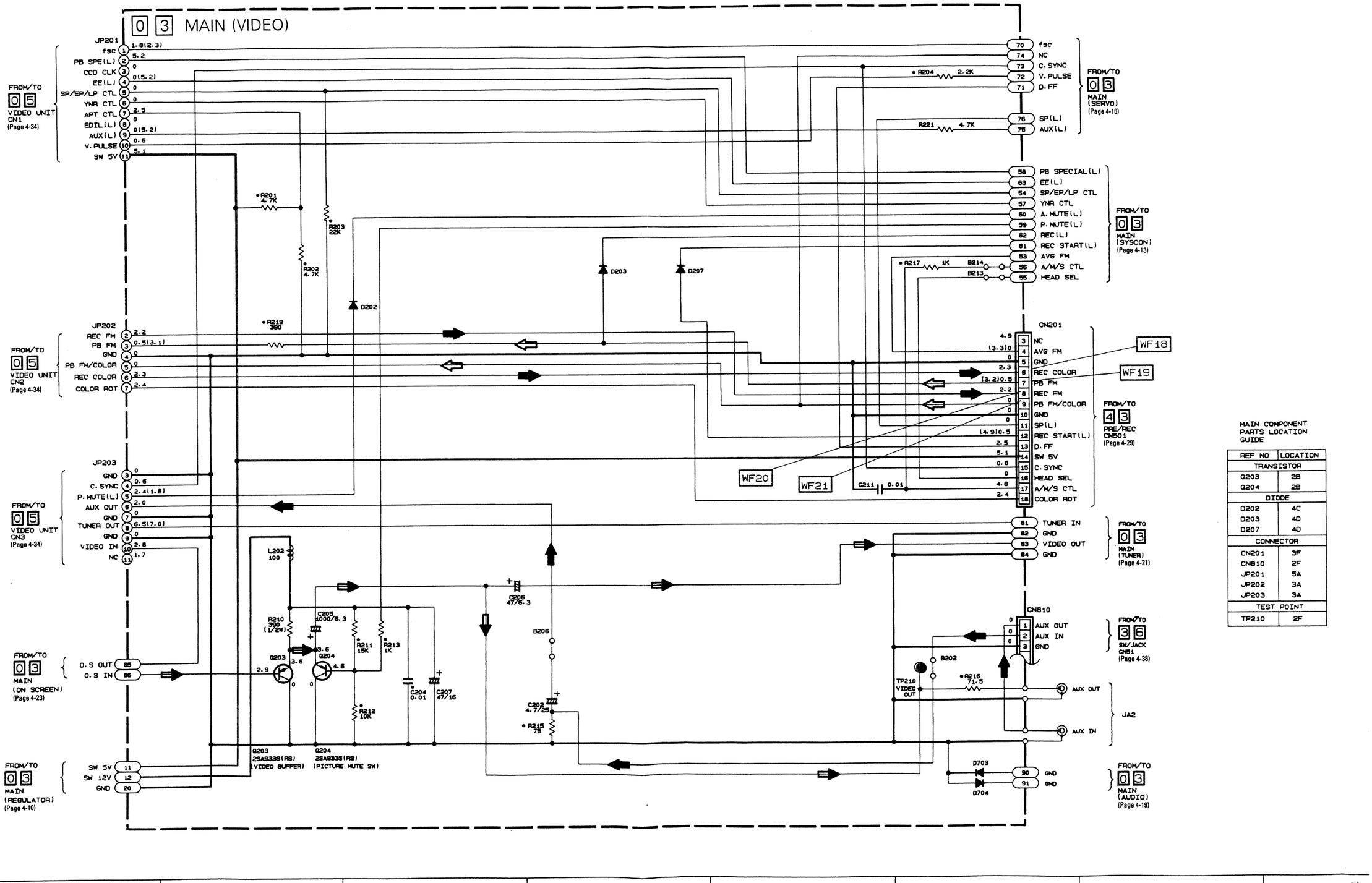
4.7 SERVO SCHEMATIC DIAGRAM



MAIN COMPONENT PARTS LOCATION GUIDE

REF NO	LOCATION
IC	
IC401	3C
DIODE	
D401	4D
D402	4D
D403	2B
CONNECTOR	
CN401	4A
CN402	3G
CP	
CP401	3G
TEST POINT	
TP401	4C

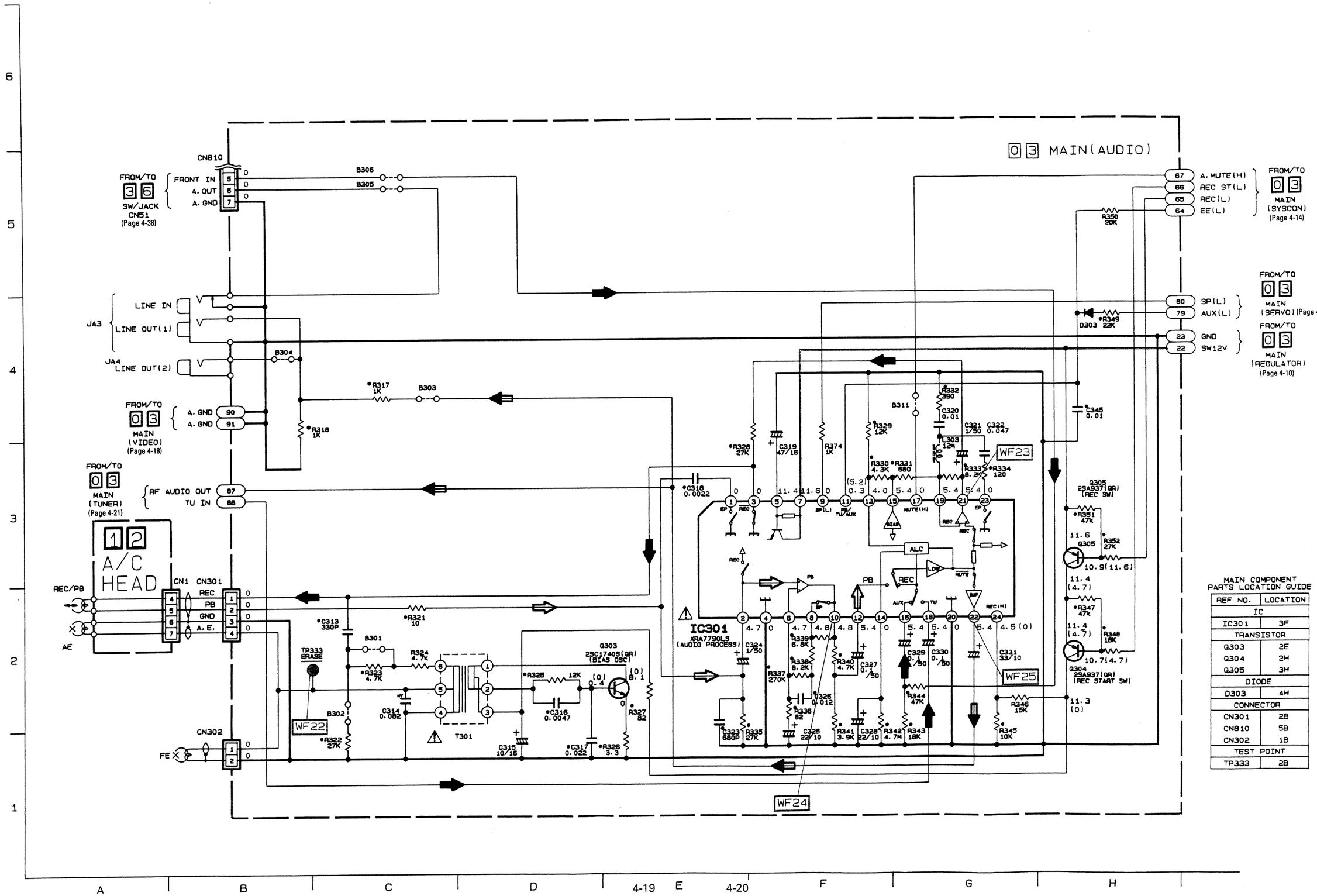
4.8 VIDEO SCHEMATIC DIAGRAM



MAIN COMPONENT PARTS LOCATION GUIDE

REF NO	LOCATION
TRANSISTOR	
Q203	2B
Q204	2B
DIODE	
D202	4C
D203	4D
D207	4D
CONNECTOR	
CN201	3F
CN810	2F
JP201	5A
JP202	3A
JP203	3A
TEST POINT	
TP210	2F

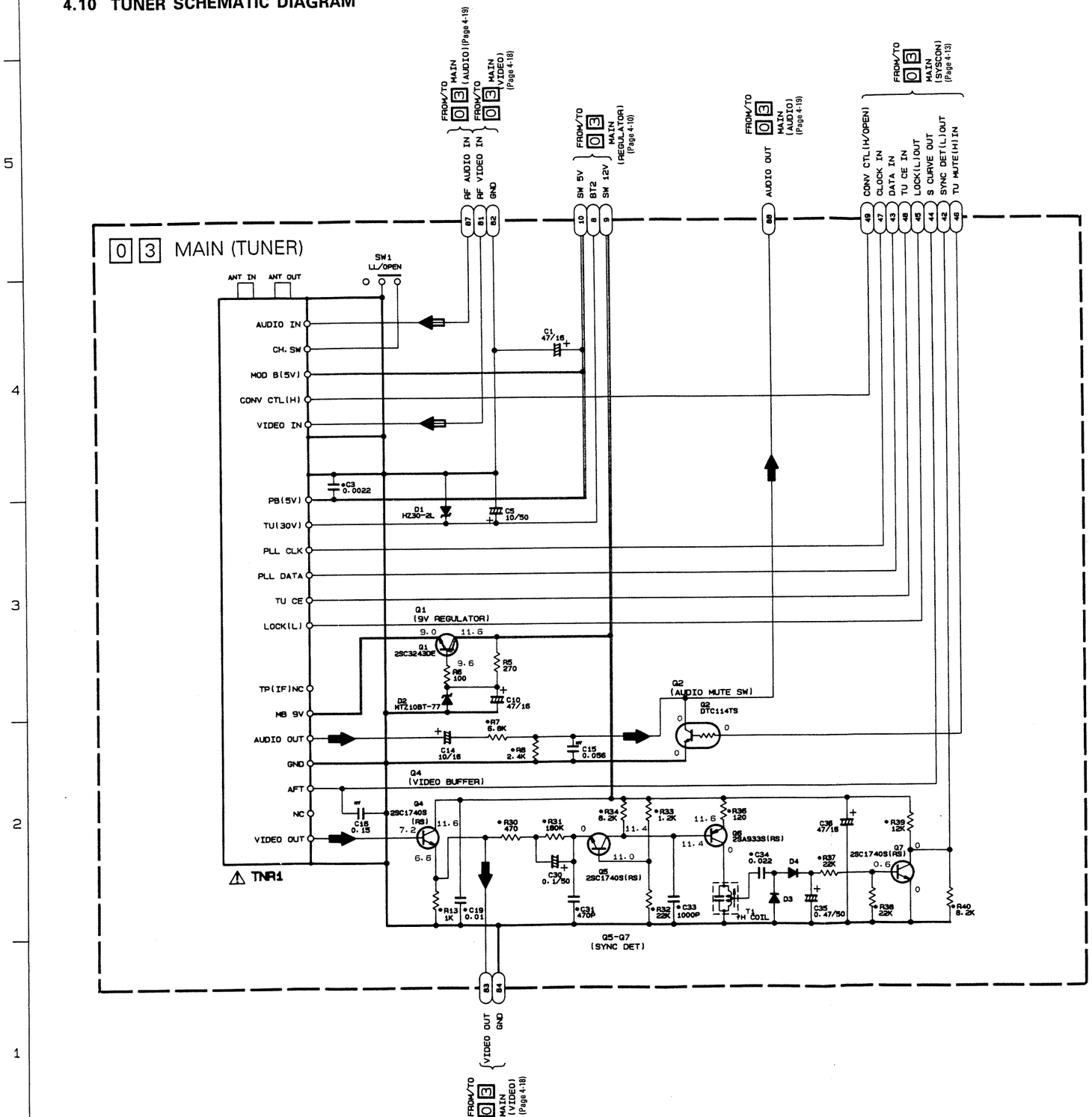
4.9 AUDIO SCHEMATIC DIAGRAM



MAIN COMPONENT PARTS LOCATION GUIDE

REF NO.	LOCATION
IC	
IC301	3F
TRANSISTOR	
Q303	2E
Q304	2H
Q305	3H
DIODE	
D303	4H
CONNECTOR	
CN301	2B
CN810	5B
CN302	1B
TEST POINT	
TP333	2B

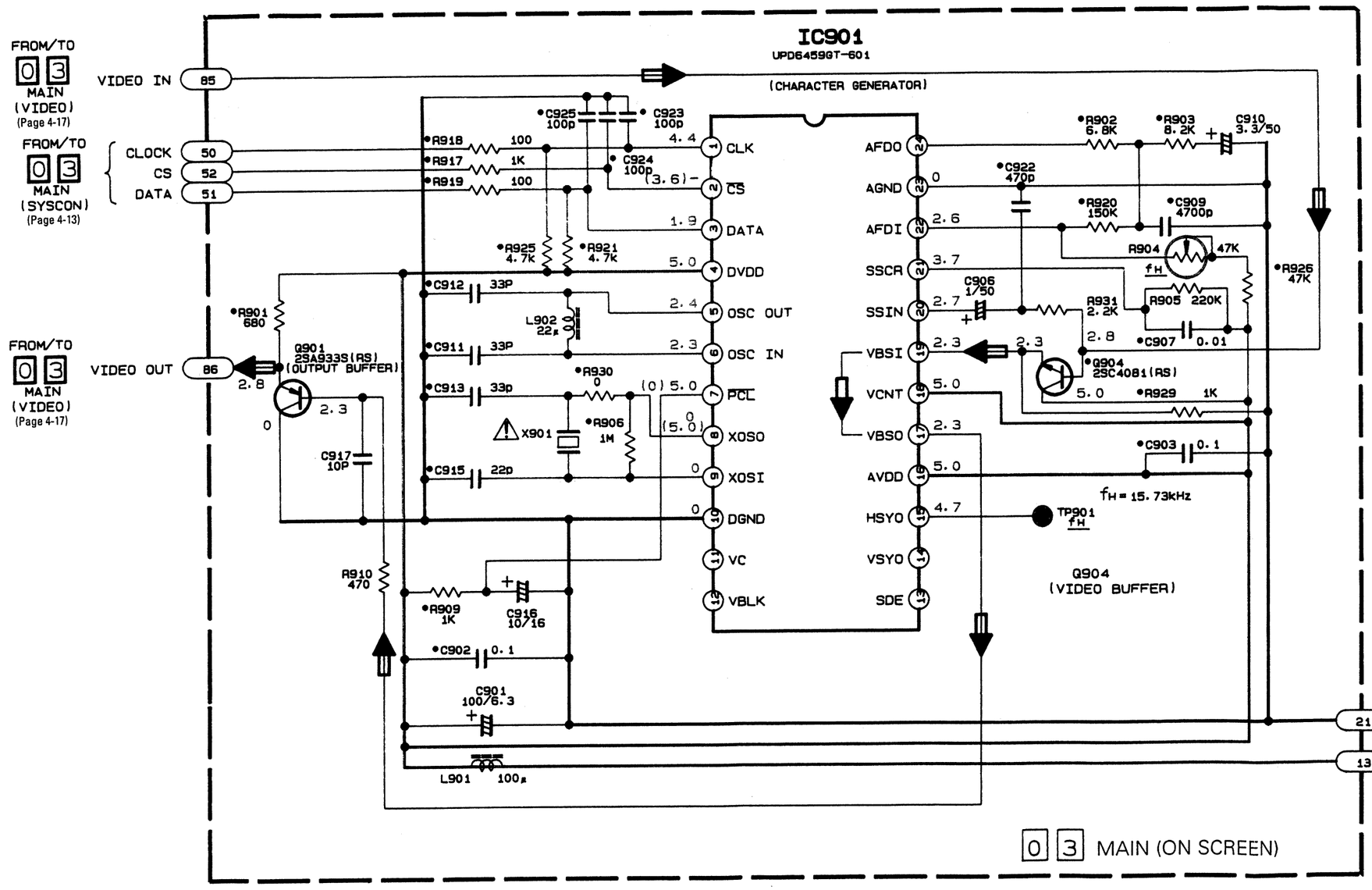
4.10 TUNER SCHEMATIC DIAGRAM



MAIN COMPONENT PARTS LOCATION GUIDE

REF NO	LOCATION
TRANSISTOR	
Q1	3B
Q2	2D
Q4	2B
Q5	2C
Q6	2D
Q7	2D
DIODE	
D1	3B
D2	3B
D3	2D
D4	2D

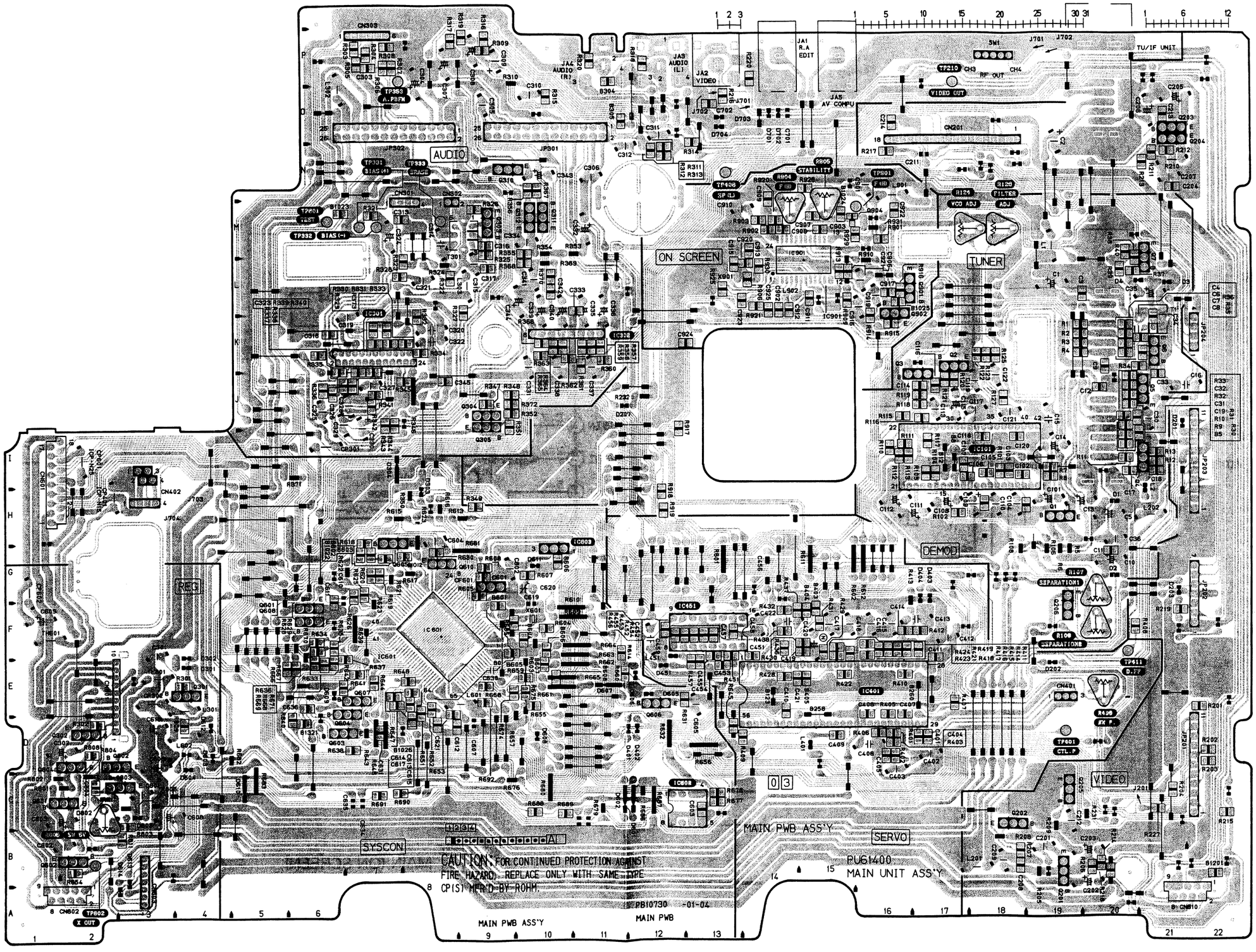
4.11 ON SCREEN SCHEMATIC DIAGRAM



MAIN COMPONENT PARTS LOCATION GUIDE

REF NO	LOCATION
IC	
IC901	3D
TRANSISTOR	
Q901	3B
Q904	3E
TEST POINT	
TP901	2E
ADJUSTMENT	
R904	3E

4.12 MAIN CIRCUIT BOARD LOCATION



MAIN COMPONENT PARTS LOCATION GUIDE <MAIN C.B.A.>

REF. No.	LOCATION
IC	
IC301	15E
IC401	15E
IC601	8F
IC602	12C
IC603	10G
IC901	15L
TRANSISTOR	
Q1	19H
Q2	17K
Q4	20I
Q5	20J
Q6	21K
Q7	20L
Q203	21N
Q204	21O
Q303	9M
Q304	9J
Q305	9J
Q601	6F
Q602	2B
Q605	7G
Q606	12E
Q608	6F
Q801	1C
Q802	3D
Q803	3C
Q901	17L
Q904	16M
DIODE	
D1	20H
D2	20G
D3	21L
D4	20L
D201	21J
D202	19E
D203	21G
D207	11J
D303	8H
D401	12D
D402	12D
D403	17F
D601	12C
D602	11C
D603	4D
D604	4C
D605	12D
D606	11E
D607	11E
D610	5C
D611	10G
D802	2C
D803	3C

REF. No.	LOCATION
CONNECTOR	
CN201	17N
JP201	22C
JP202	22G
JP203	22I
CN301	8M
CN302	8M
CN401	19E
CN402	3H
CN601	2I
CN801	2E
CN802	2A
CN810	22A
ADJUSTMENT	
R805	2C
R904	14M
TEST POINT	
TP201	17P
TP333	8M
TP401	19D
CP	
CN401	2H
CP601	2I

LEADLESS COMPONENT PARTS LOCATION GUIDE <MAIN C.B.A.>

REF. No.	LOCATION
IC	
IC601	8F
IC901	15L

REF. No.	LOCATION
TRANSISTOR	
Q904	16M

REF. No.	LOCATION
RESISTOR	
R1	19K
R2	19K
R3	19K
R4	19K
R7	19I
R8	19I
R9	20I
R10	20J
R11	20I
R12	21I
R13	21I
R30	21I
R32	20J
R33	20J
R34	21K
R35	21K
R36	21K
R37	21L
R38	21L
R39	20L
R40	20L
R101	18I
R102	17H
R104	17I
R105	17I
R110	16I
R111	16I
R112	16I
R113	17I
R115	16J
R116	17J
R117	17I
R118	17J
R119	17J
R120	17J
R121	17J
R122	18K
R123	18K
R125	18K
R127	18J
R201	22D
R202	22D
R203	22C
R204	21C
R206	20B
R207	18B
R211	21N
R212	21N
R213	21N
R214	20B
R215	22C
R216	13O
R217	16N
R218	20B
R219	21K
R220	14P
R227	21C

REF. No.	LOCATION
RESISTOR	
R301	4E
R302	2D
R303	7P
R304	7P
R305	7P
R307	7P
R308	7P
R309	9P
R311	12N
R312	12N
R313	12N
R314	13N
R315	10O
R316	9P
R317	8P
R318	12P
R319	9P
R320	11P
R321	7M
R322	8L
R323	8L
R325	9L
R326	9M
R327	9L
R328	7L
R329	7K
R330	7K
R331	7K
R332	8K
R333	8K
R334	8K
R335	6K
R336	6J
R337	6J
R338	7J
R339	7K
R340	7K
R341	7J
R342	7J
R343	7J
R344	7J
R345	8J
R347	9J
R348	9J
R349	9H
R351	9J
R352	9J
R355	10M
R356	10N
R357	11K
R358	11K
R359	11K
R360	11K
R361	11K
R362	11K
R363	10K
R364	10K
R365	10K
R366	10K
R367	10N
R368	10L
R370	10L
R372	9J
R373	7K
R401	17D
R402	16D
R403	16D
R405	16D
R406	16D
R407	17E
R408	20F

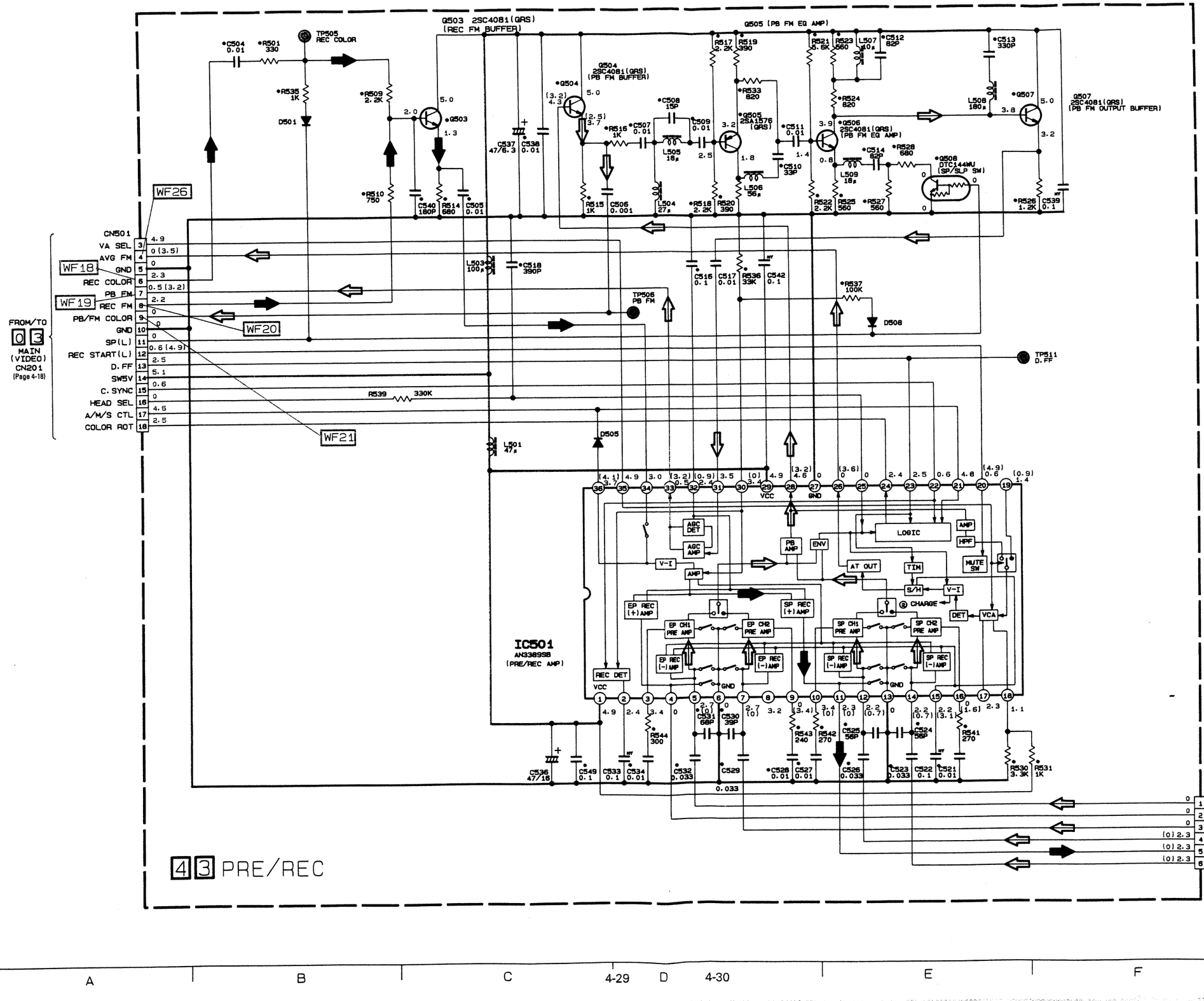
REF. No.	LOCATION
RESISTOR	
R409	13D
R410	16E
R411	17F
R412	17F
R414	16F
R415	16F
R416	16F
R417	16F
R418	16E
R419	16F
R421	15E
R422	15E
R423	15E
R424	15F
R428	14D
R429	15F
R430	15F
R431	15F
R432	14F
R436	14F
R437	15F
R438	14F
R451	13E
R452	13F
R453	13F
R454	13F
R455	12F
R456	12F
R457	13E
R604	10F
R605	9F
R606	10G
R607	10G
R608	9G
R614	11F
R618	7H
R619	7G
R620	7G
R625	7G
R626	7F
R630	8G
R631	13E
R634	6F
R635	6F
R636	6F
R637	7E
R638	7D
R640	6D
R641	7E
R642	6E
R644	7E
R645	13D
R648	8E
R651	8D
R652	8D
R653	8D
R654	2B
R655	10D
R658	9E
R659	10E
R660	11E
R666	6E
R667	5E
R668	6E
R669	6E
R671	6E
R674	9E
R675	10E
R677	13C
R678	13C
R685	9F

REF. No.	LOCATION
RESISTOR	
R688	10C
R689	10C
R690	7C
R691	7C
R692	9E
R693(B603)	7G
R803	3B
R808	2D
R809	4D
R811	3B
R901	10M
R902	14M
R903	14M
R906	14L
R909	15L
R913	15L
R914	16K
R915	16K
R916	16K
R917	13J
R918	12H
R919	12H
R920	14M
R921	14L
R925	13L
R926	15N
R929	16M
R930	14L

REF. No.	LOCATION
CAPACITOR	
C3	20L
C4	20K
C6	20K
C7	20K
C8	20K
C9	20K
C11	20G
C12	20J
C17	20I
C18	21I
C19	20J
C31	20J
C32	20J
C33	21J
C34	21K
C102	18I
C103	18I
C105	18I
C106	18I
C107	17I
C114	17J
C116	17J
C118	18I
C120	18I
C204	21N
C208	18B
C213	21O
C214	16O
C303	7P
C313	8M
C316	9M
C317	9L
C318	6K
C323	6J
C326	6J
C333	11L
C342	10L
C345	8J

REF. No.	LOCATION
CAPACITOR	
C401	17D
C404	16D
C405	16D
C407	16D
C408	16D
C409	15D
C410	14D
C411	17E
C414	16F
C419	15F
C421	14D
C451	14D
C452	13F
C453	13E
C454	13E
C355	13E
C357	13F
C601	9G
C603	13C
C611	6F
C612	8D
C613	8E
C614	7E
C615	8D
C617	7E
C621	8D
C630	9E
C631	7D
C636	6E
C702	13O
C804	2C
C902	14L
C903	15M
C907	15M
C908	14M
C909	14N
C911	15L
C912	14L
C913	14M
C915	13L
C917	16L
C920	14L
C921	15L
C922	16M
C923	14L
C924	13K
C925	14L

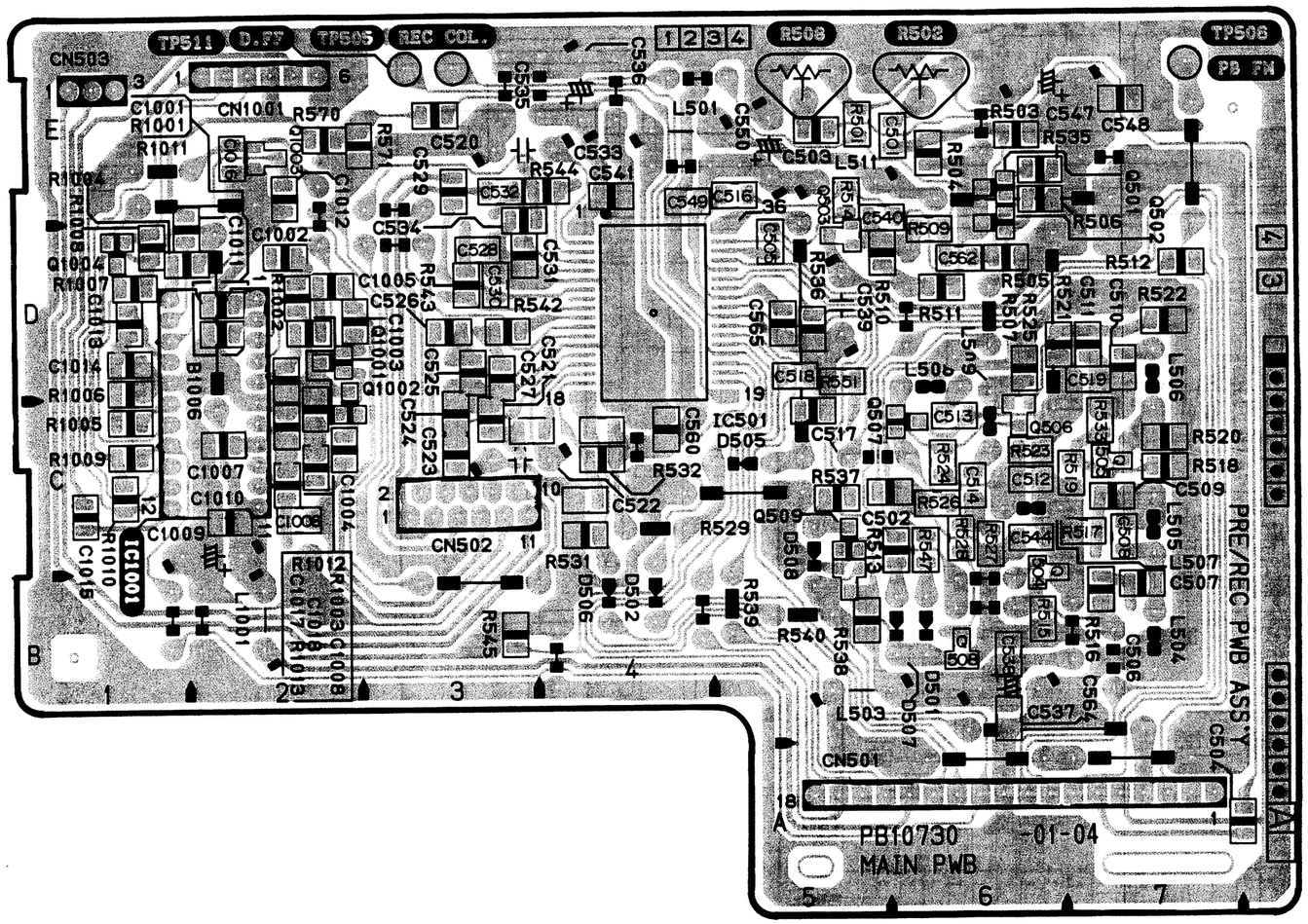
4.13 PRE/REC SCHEMATIC DIAGRAM



MAIN COMPONENT PARTS LOCATION GUIDE

REF NO	LOCATION
IC	
IC501	2D
TRANSISTOR	
Q503	4C
Q504	4C
Q505	4D
Q506	4E
Q507	4E
Q508	4E
DIODE	
D501	4B
D505	3C
D508	3E
CONNECTOR	
CN501	4A
CN502	1F
TEST POINT	
TP505	5B
TP506	4D
TP511	3E

4.14 PRE/REC CIRCUIT BOARD



MAIN COMPONENT PARTS LOCATION GUIDE <PRE/REC C.B.A.>

REF. No.	LOCATION
IC	
IC501	4D
TRANSISTOR	
Q503	5D
Q504	6C
Q505	7C
Q506	6C
Q507	6C
Q508	6B
DIODE	
D501	6B
D505	5C
D508	5C
CONNECTOR	
CN501	6A
TEST POINT	
TP505	3E
TP506	1E
TP511	3E

LEADLESS COMPONENT PARTS LOCATION GUIDE <PRE/REC C.B.A.>

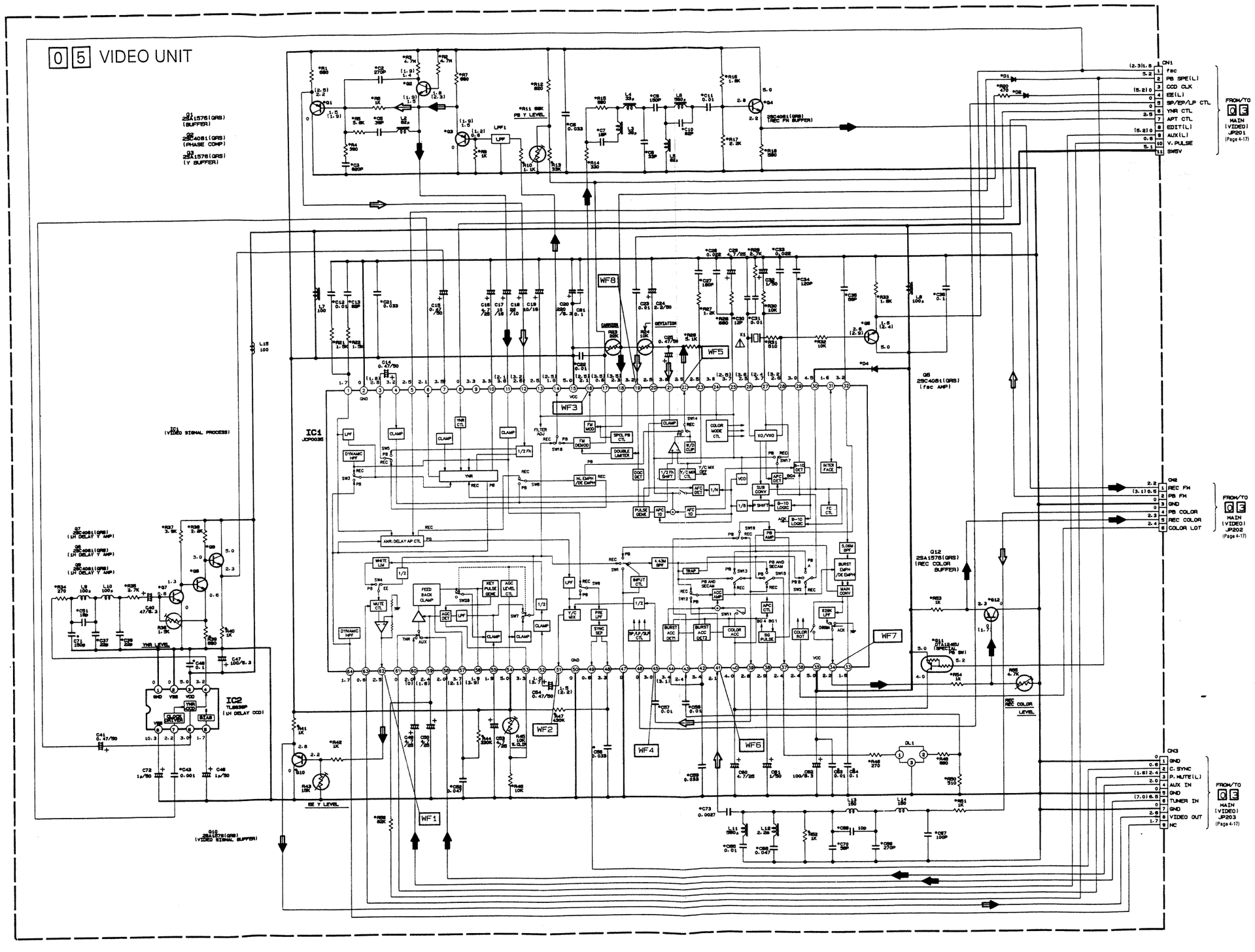
REF. No.	LOCATION
IC	
IC501	4D

REF. No.	LOCATION
TRANSISTOR	
Q501	6E
Q502	6E
Q503	5D
Q504	6C
Q505	7C
Q506	6C
Q507	6C
Q508	6B
Q509	5C
Q510	5C
Q1001	2D
Q1002	2C
Q1003	2E
Q1004	1D

REF. No.	LOCATION
RESISTOR	
R501	5E
R503	6E
R504	6E
R505	6D
R506	6E
R509	6D
R510	5D
R511	6D
R512	7D
R513	6C
R514	5E
R515	6B
R516	7B
R517	7C
R518	7C
R519	7C
R520	7C
R521	6D
R522	7D
R523	6C
R524	6C
R525	6D
R526	6C
R527	6C
R528	6C
R530	4C
R531	4C
R532	4C
R533	7C
R534	4C
R535	6E
R536	5D
R537	5C
R538	5B
R541	3C
R542	3D
R543	3D
R544	4E
R545	3B
R547	6C
R551	5D
R570	2E
R571	3E
R1001	2D
R1002	2D
R1003	2C
R1004	2D
R1005	1C
R1006	1D
R1007	1D
R1008	1D
R1009	1C
R1010	1C
R1012	2D
R1013	2C

REF. No.	LOCATION
CAPACITOR	
C501	6E
C502	6C
C503	5E
C504	7A
C505	5D
C507	7B
C508	7C
C509	7C
C510	7D
C511	7D
C512	6C
C513	6C
C514	6C
C515	5C
C516	5E
C518	5D
C519	7D
C520	3E
C521	3C
C523	3C
C524	3C
C525	3D
C526	3D
C527	3D
C528	3D
C529	3E
C530	3D
C531	3D
C532	3D
C534	3E
C538	6B
C540	6D
C541	4E
C544	6C
C548	7E
C549	4E
C560	4C
C562	6D
C564	6B
C565	5D
C1001	2D
C1002	2D
C1003	2D
C1004	2C
C1005	2D
C1006	2C
C1007	2C
C1008	2C
C1010	2C
C1011	2D
C1012	2E
C1013	1D
C1014	1D
C1015	1C
C1016	2E
C1017	2D
C1018	2C

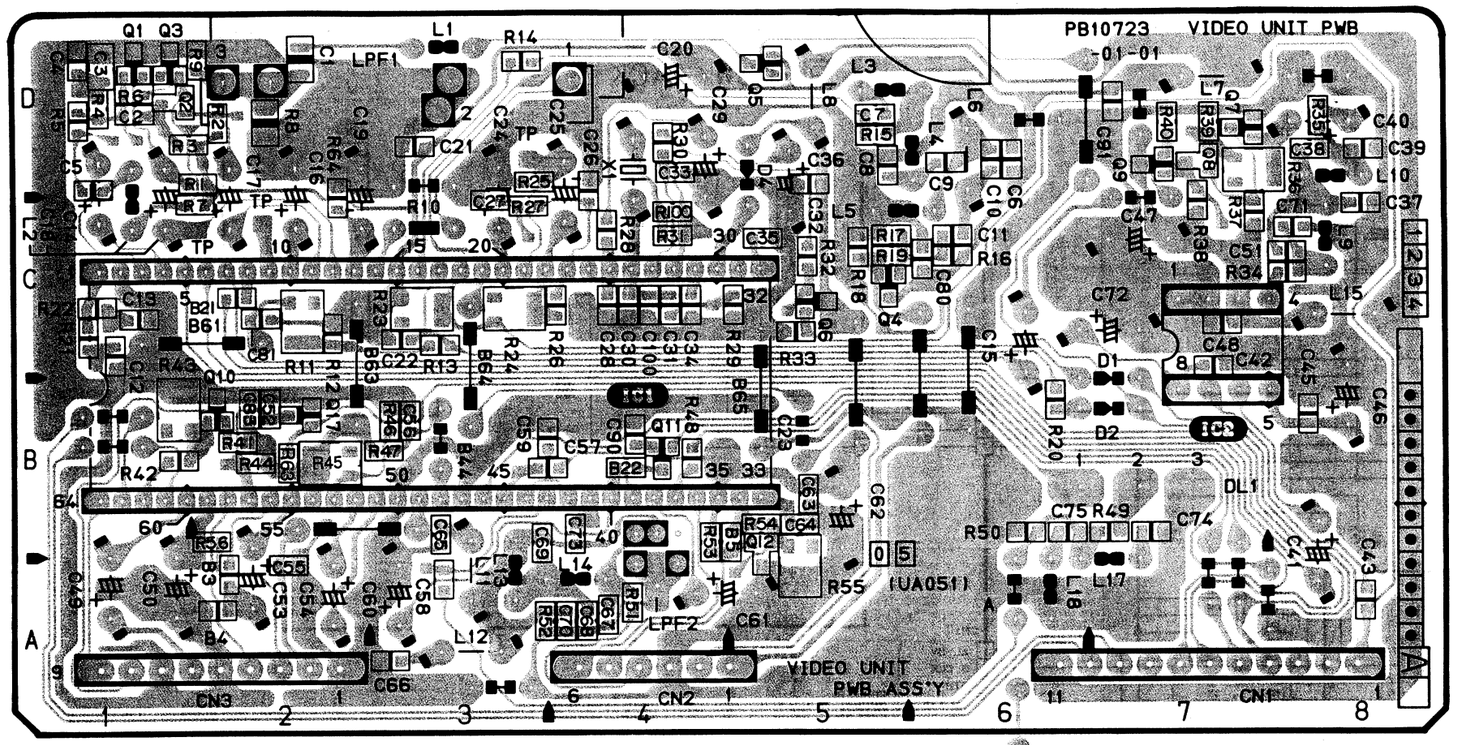
4.15 VIDEO UNIT SCHEMATIC DIAGRAM


05 VIDEO UNIT
IC1 (VIDEO SIGNAL PROCESS)
IC1 JCP0035
IC2 TL863BP (1H DELAY CCD)
Q1 2SA1576(QRS) (BUFFER)
Q2 2SC4081(QRS) (PHASE COMP)
Q3 2SA1576(QRS) (Y BUFFER)
Q5 2SC4081(QRS) (fsc AMP)
Q6 2SC4081(QRS) (REC FM BUFFER)
Q7 2SC4081(QRS) (1H DELAY Y AMP)
Q8 2SC4081(QRS) (1H DELAY Y AMP)
Q9 2SC4081(QRS) (1H DELAY Y AMP)
Q10 2SA1576(QRS) (VIDEO SIGNAL BUFFER)
Q12 2SA1576(QRS) (REC COLOR BUFFER)
CN1 fsc, PB SPE(L), CCD CLK, EE(L), SP/EP/LP CTL, YNR CTL, APT CTL, EDIT(L), AUX(L), V. PULSE, SWBV
CN2 REC FM, PB FM, GND, PB COLOR, REC COLOR, COLOR LOT
CN3 GND, C. SYNC, P. MUTE(L), AUX IN, GND, TUNER IN, GND, VIDEO OUT, NC
FROM/TO QE MAIN (VIDEO) JP201 (Page 4-17)
FROM/TO QE MAIN (VIDEO) JP202 (Page 4-17)
FROM/TO QE MAIN (VIDEO) JP203 (Page 4-17)
WF1
WF2
WF3
WF4
WF5
WF6
WF7
WF8
YNR LEVEL
EE Y LEVEL
REC REC COLOR LEVEL
PB Y LEVEL

MAIN COMPONENT PARTS LOCATION GUIDE

REF NO	LOCATION
IC	
IC1	3D
IC2	2B
TRANSISTOR	
D1	5B
Q2	5C
Q3	5C
Q4	5E
Q5	5E
Q7	3B
Q8	3B
Q9	3B
Q10	2B
Q11	2E
Q12	3F
DIODE	
D1	5F
D2	5F
D4	4E
CONNECTOR	
CN1	5G
CN2	3G
CN3	2G

4.16 VIDEO UNIT CIRCUIT BOARD



MAIN COMPONENT PARTS LOCATION GUIDE <VIDEO UNIT C.B.A.>

REF. No.	LOCATION
IC	
IC1	3B
IC2	7B
TRANSISTOR	
Q1	1D
Q2	1D
Q3	1D
Q4	5C
Q6	5C
Q7	7D
Q8	7D
Q9	7D
Q10	2B
Q11	4B
Q12	5A

REF. No.	LOCATION
DIODE	
D1	7B
D2	7B
D4	5D
CONNECTOR	
CN1	7A
CN2	4A
CN3	2A

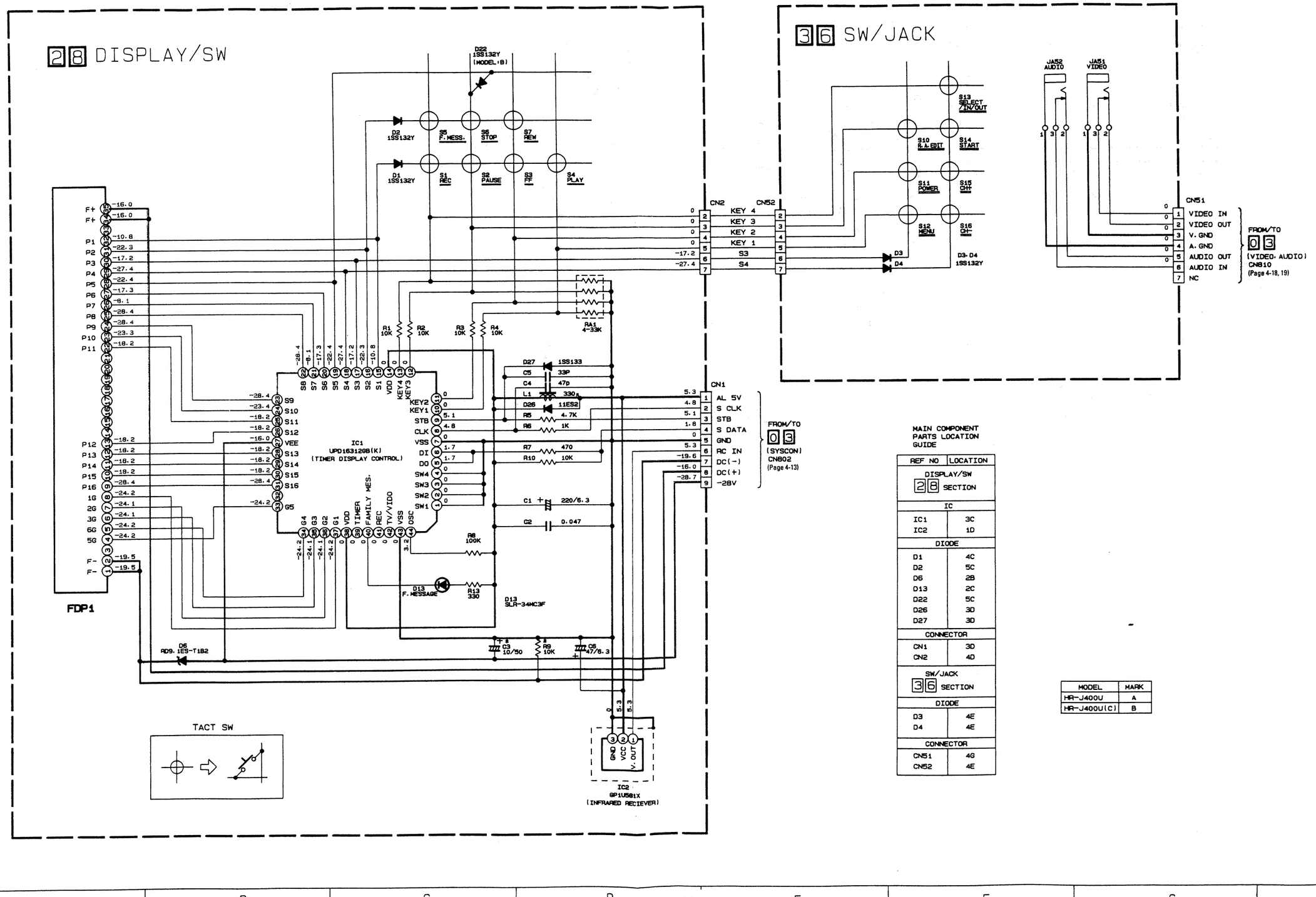
LEADLESS COMPONENT PARTS LOCATION GUIDE <VIDEO UNIT C.B.A.>

REF. No.	LOCATION
TRANSISTOR	
Q1	1D
Q2	1D
Q3	1D
Q4	5C
Q5	5D
Q6	5C
Q7	7D
Q8	7D
Q9	7D
Q10	2B
Q11	4B
Q12	5A
Q17	2B

REF. No.	LOCATION
RESISTOR	
R1	1D
R2	2D
R3	1D
R4	1D
R5	1D
R6	1D
R7	2C
R8	2D
R9	2D
R11	2C
R12	2C
R13	3C
R14	3D
R15	5D
R16	6C
R17	5C
R18	5C
R19	5C
R20	6B
R21	1C
R22	1C
R23	3C
R24	3C
R25	3D
R26	4C
R27	3C
R28	4C
R29	5C
R30	4D
R31	4C
R32	5C
R33	5C
R34	7C
R35	8D
R36	8D
R37	7C
R38	7C
R39	7D
R40	7D
R41	2B
R42	1B
R43	1B
R45	2B
R46	3B
R47	3B
R48	4B
R49	7B
R50	6B
R51	4A
R52	3A
R53	4B
R54	5B
R55	5A
R56	2A
R63	2B
R64	2D
R100	4C

REF. No.	LOCATION
CAPACITOR	
C1	2D
C2	1D
C3	1D
C4	1D
C5	1D
C6	6D
C7	5D
C8	5D
C9	6D
C10	6D
C11	6C
C12	1C
C13	1C
C21	3D
C22	3C
C26	4D
C27	3C
C28	4C
C30	4C
C31	4C
C32	5D
C33	4D
C34	4C
C35	5C
C37	8C
C38	8D
C39	8D
C43	8A
C45	8B
C48	7C
C51	7C
C52	2B
C55	2B
C56	3B
C57	4B
C58	3A
C59	3B
C63	5B
C64	5B
C65	3A
C66	3A
C67	4A
C68	4A
C69	2B
C70	4A
C71	8C
C73	3B
C74	7B
C75	6B
C80	6C
C81	2B
C83	2B
C90	4B
C91	7D
C100	4C

4.17 FRONT SCHEMATIC DIAGRAM



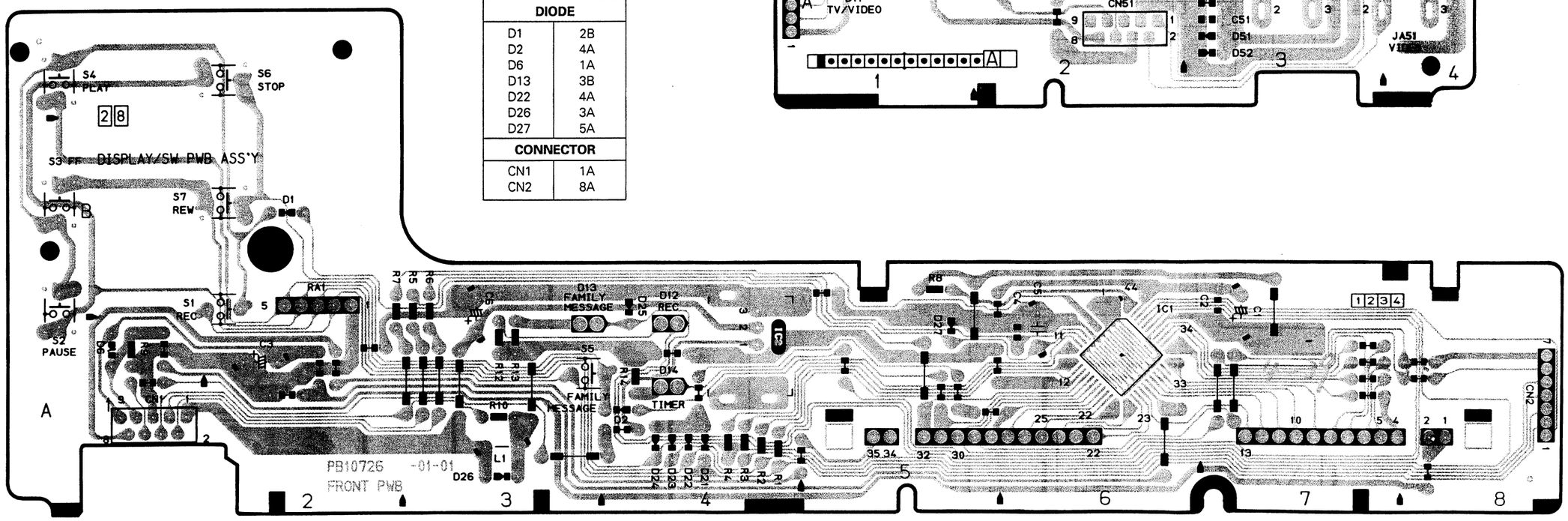
MAIN COMPONENT PARTS LOCATION GUIDE

REF NO	LOCATION
DISPLAY/SW 28 SECTION	
IC	
IC1	3C
IC2	1D
DIODE	
D1	4C
D2	5C
D6	2B
D13	2C
D22	5C
D26	3D
D27	3D
CONNECTOR	
CN1	3D
CN2	4D
SW/JACK 36 SECTION	
DIODE	
D3	4E
D4	4E
CONNECTOR	
CN51	4G
CN52	4E

MODEL	MARK
HR-J400U	A
HR-J400U(C)	B

4.18 FRONT CIRCUIT BOARD

— DISPLAY/SW —

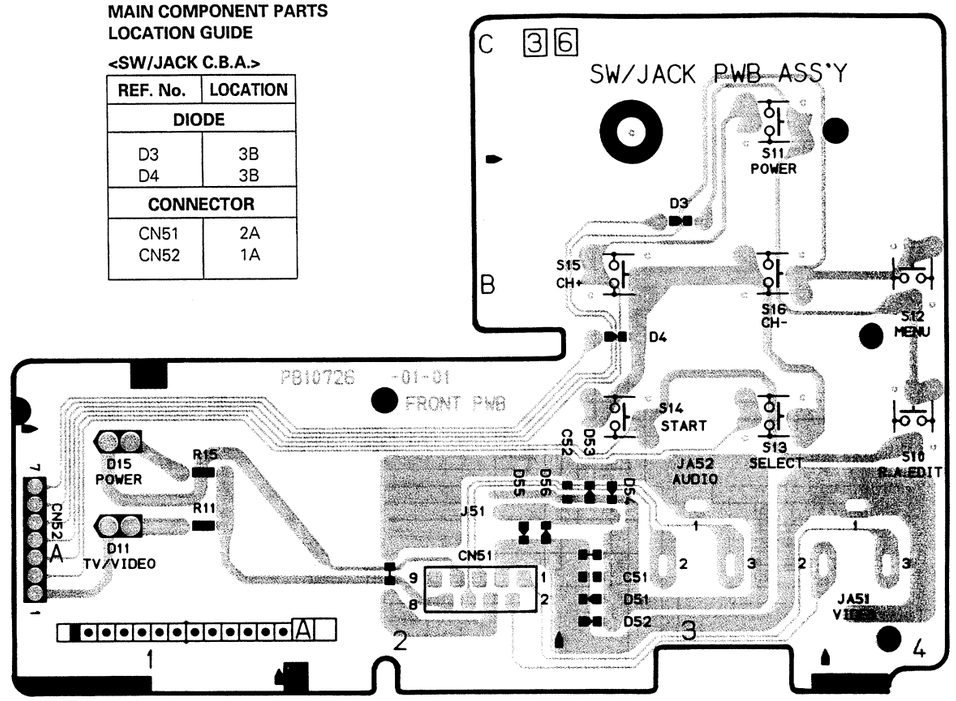


MAIN COMPONENT PARTS
LOCATION GUIDE

<DISPLAY SW C.B.A.>

REF. No.	LOCATION
IC	
IC1	6A
IC2	4A
DIODE	
D1	2B
D2	4A
D6	1A
D13	3B
D22	4A
D26	3A
D27	5A
CONNECTOR	
CN1	1A
CN2	8A

— SW/JACK —

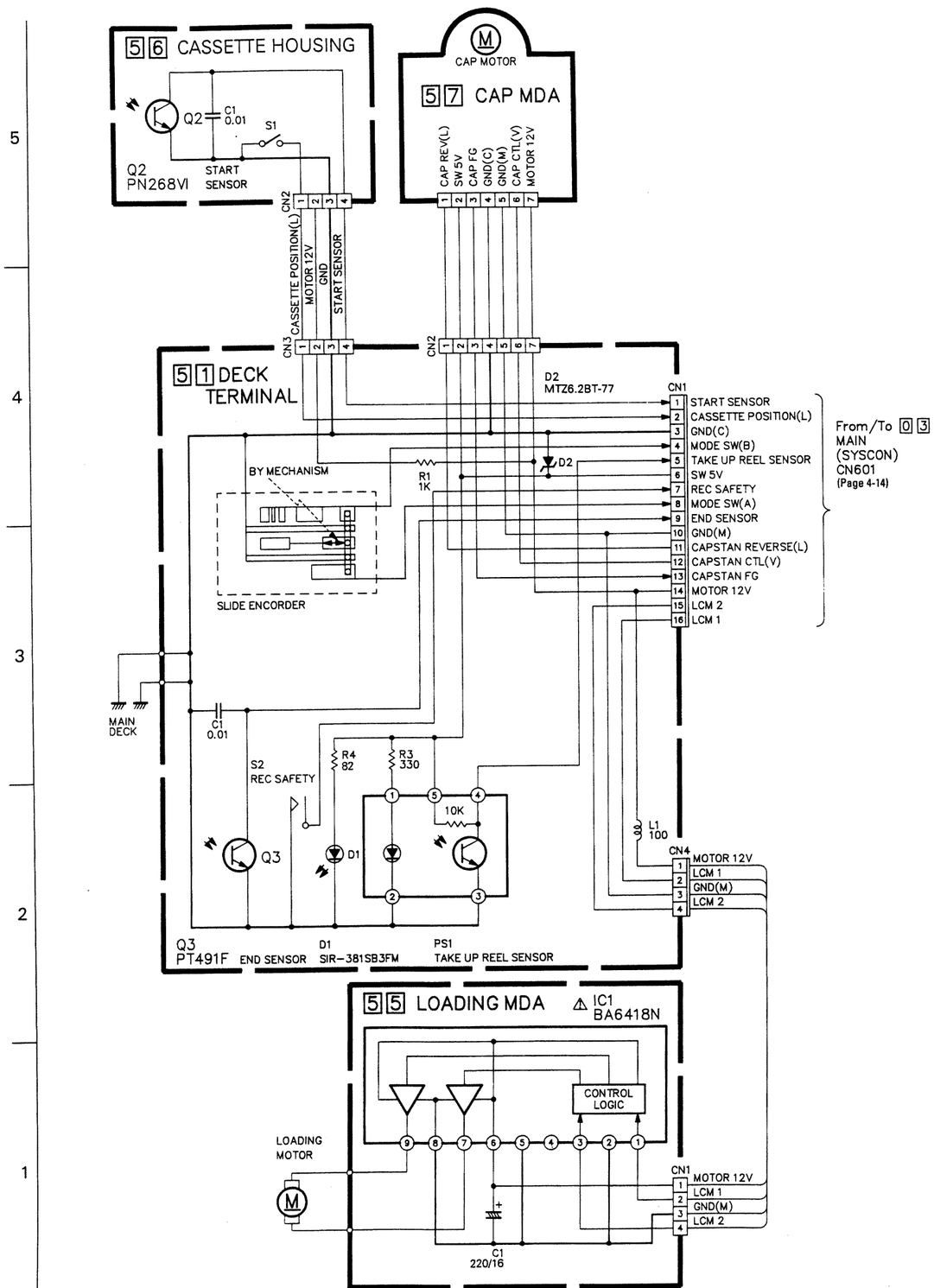


MAIN COMPONENT PARTS
LOCATION GUIDE

<SW/JACK C.B.A.>

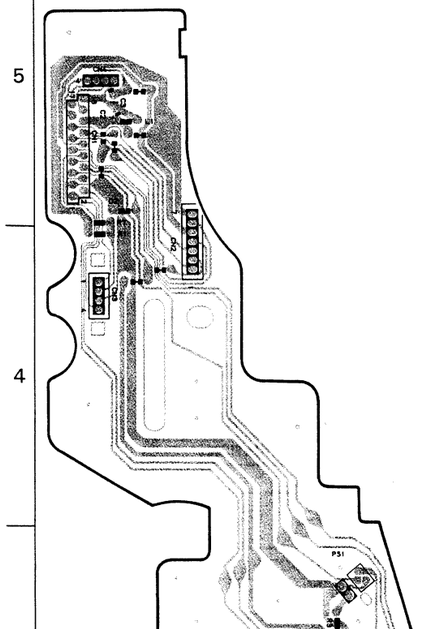
REF. No.	LOCATION
DIODE	
D3	3B
D4	3B
CONNECTOR	
CN51	2A
CN52	1A

4.19 DECK TERMINAL, CASSETTE HOUSING, CAPSTAN MDA AND LOADING MDA SCHEMATIC DIAGRAMS

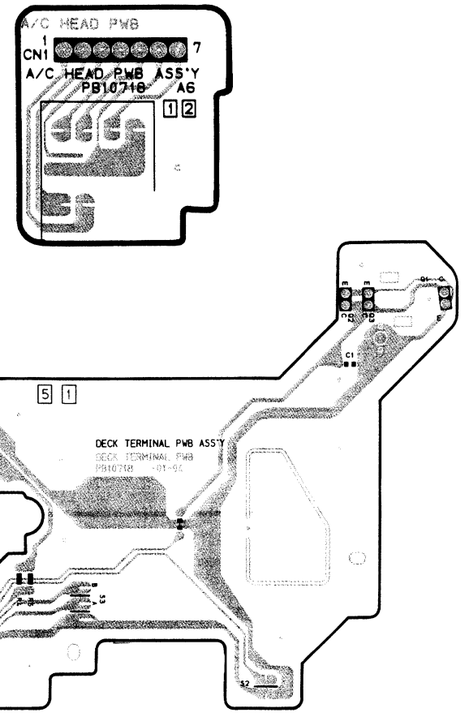


4.20 DECK TERMINAL, LOADING MDA, CASSETTE HOUSING AND A/C HEAD CIRCUIT BOARDS

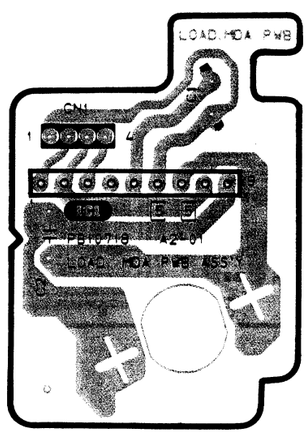
DECK TERMINAL C.B.A.



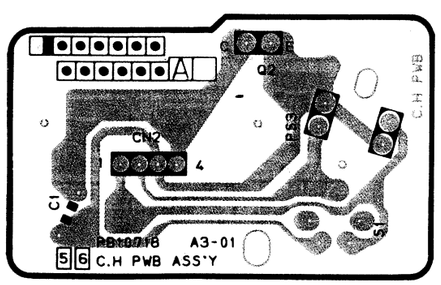
A/C HEAD C.B.A.



LOADING MDA C.B.A.



CASSETTE HOUSING C.B.A.

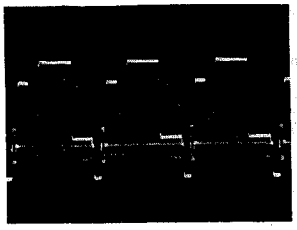


4.21 WAVEFORM PHOTOGRAPHS

NOTE: Waveforms are measured with a color bar during recording (1kHz, –8 dBs) and playback it.

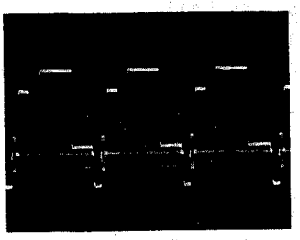
< VIDEO UNIT >

WF1



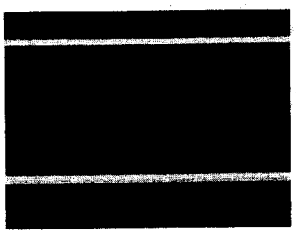
REC 2.2 Vp-p

WF2



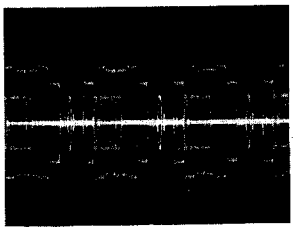
PB 1.1 Vp-p

WF3



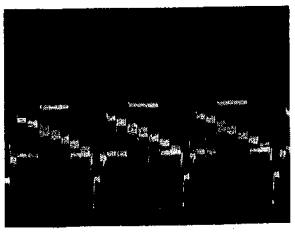
REC 1.1 Vp-p

WF4



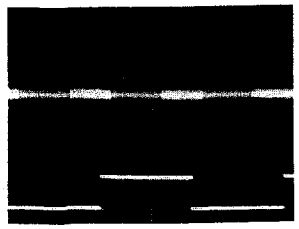
PB 0.7 Vp-p

WF5



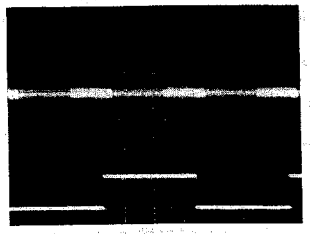
REC1.2 Vp-p

WF6



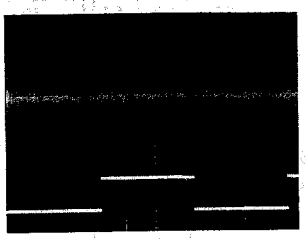
REC 0. 1 Vp-p

WF7



REC 0.4 Vp-p

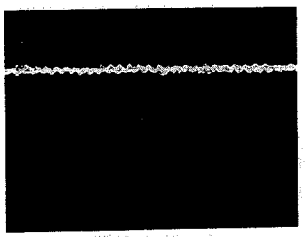
WF8



PB 0.4 Vp-p

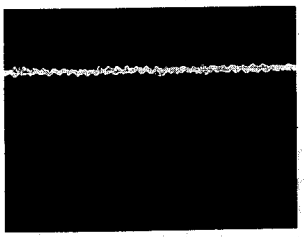
< MAIN >

WF9



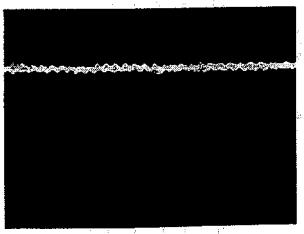
REC DC 1.8 V

WF10



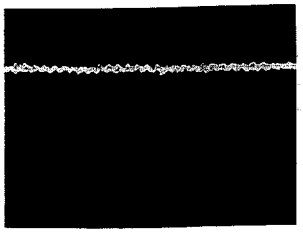
REC DC 2.5 V

WF11



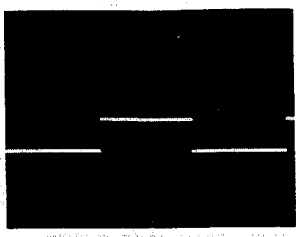
REC DC 2.7 V

WF12



REC DC 3.1 V

WF13

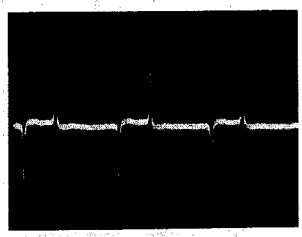


REC/PB 0.6 Vp-p

WF14

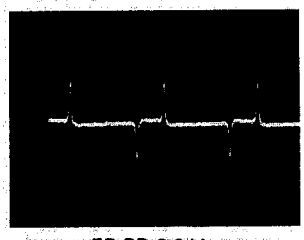
REC/PB 5.4 Vp-p

WF15



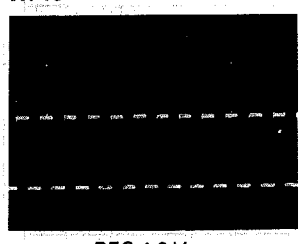
SP PB 2.0 Vp-p

WF15



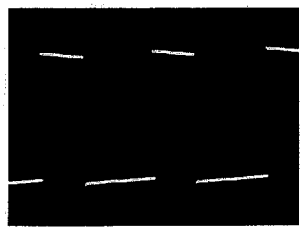
EP PB 2.0 Vp-p

WF16



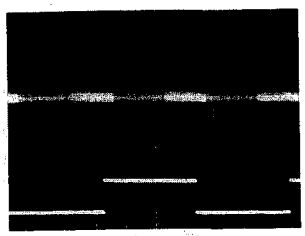
REC 4.0 Vp-p

WF17



REC 0.6 Vp-p

WF18



REC 0.3 Vp-p

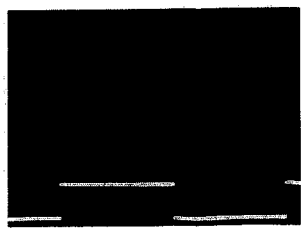
WF19

PB 0.56 Vp-p

WF20

REC 0.6 Vp-p

WF21

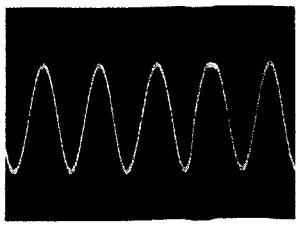


SP PB 0.6 Vp-p

WF21

EP PB 0.3 Vp-p

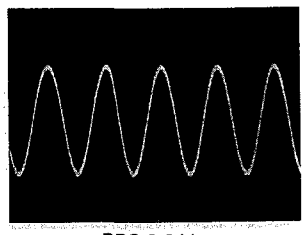
WF22



REC 34.0 Vp-p

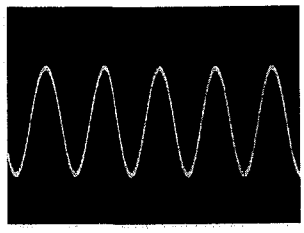
4.22 VOLTAGE CHARTS (SYSCON AND SERVO SECTION)

WF23



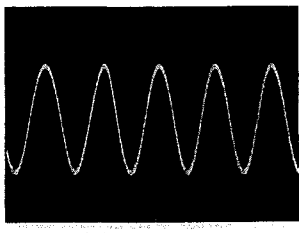
REC 2.8 Vp-p

WF24



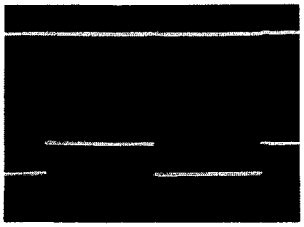
REC 0.2 Vp-p

WF25



REC/PB 2.2 Vp-p

WF26



PB 3.4 Vp-p

<SERVO SECTION>
— IC401 —

MODE / PIN No.	STOP (Half loading)	REW	FF
1	5.2	5.2	5.2
2	5.1	5.2	5.1
3	0	0	0
4	0	0	0
5	0	0	0
6	0	0	0
7	0	0	0
8	1.5	2.7	2.7
9	5.2	5.2	5.2
10	5.2	5.2	5.2
11	3.0	0	0
12	0	0	0
13	0	0	0
14	2.6	2.6	2.6
15	2.6	2.6	2.6
16	2.7	5.1	5.1
17	2.5	2.5	2.5
18	0	0	0
19	0	2.6	2.6
20	2.6	2.6	2.6
21	0	2.6	2.6
22	0	2.6	2.6
23	0	2.6	2.6
24	0	2.6	2.6
25	0	2.6	2.6
26	3.9	2.8	2.7
27	3.9	2.8	2.7
28	5.2	5.2	5.2
29	2.6	2.6	2.6
30	2.6	2.6	2.6
31	0	0	0
32	2.6	2.6	2.6
33	2.6	2.6	2.6
34	2.5	2.6	2.6
35	2.6	2.6	2.6
36	2.6	2.6	2.6
37	0	0	0
38	2.6	2.6	2.6
39	5.2	5.2	5.2
40	0	3.1	3.2
41	0	0	0
42	2.7	2.7	2.7
43	2.3	2.3	2.3
44	0	5.2	5.2
45	0	5.1	5.1
46	5.2	5.2	5.2
47	0	0	0
48	5.2	5.2	5.2
49	1.4	1.4	1.4
50	2.7	2.7	2.7
51	5.2	5.2	5.1
52	5.2	5.2	5.2
53	5.2	2.6	2.6
54	5.2	2.6	2.7
55	5.2	0	0
56	0	0	0

<SYSCON SECTION>
— IC601 —

MODE / PIN No.	STOP (Half loading)	REW	FF
1	3.0	2.1	0.8
2	0	0	0
3	0	0	0
4	0.5	0	0
5	0	0	0
6	0	0	0
7	0	0	0
8	5.2	5.2	5.2
9	0	0	0
10	2.5	2.5	2.5
11	2.5	2.6	2.5
12	5.2	5.2	5.3
13	0	0	0
14	0	0	0
15	5.2	5.2	5.3
16	4.6	4.6	4.6
17	0	3.2	3.2
18	0	0	0
19	0	0	0
20	0	0	0
21	0	5.2	5.3
22	5.1	3.0	3.0
23	0	0	0
24	0	0	0
25	5.1	5.2	5.2
26	5.2	0	0
27	2.9	2.8	2.9
28	0	5.2	5.3
29	0	0	0
30	0	0	0
31	0	0	0
32	0	5.2	0
33	5.2	0	0
34	0	0	0
35	0	0	0
36	0	0	0
37	0	0	0
38	0	0	0
39	5.2	5.2	5.3
40	0.4	0	0
41	0	0	0
42	5.2	5.2	5.3
43	0	5.2	0
44	4.7	4.8	4.9
45	0.4	0	0
46	0	0	5.3
47	3.5	3.4	3.5
48	0	0	0
49	0	0	0
50	5.2	5.2	5.3
51	5.2	5.2	5.3
52	0	2.6	2.7
53	0	0	0
54	0	0	0
55	0	0	0
56	0	0	0

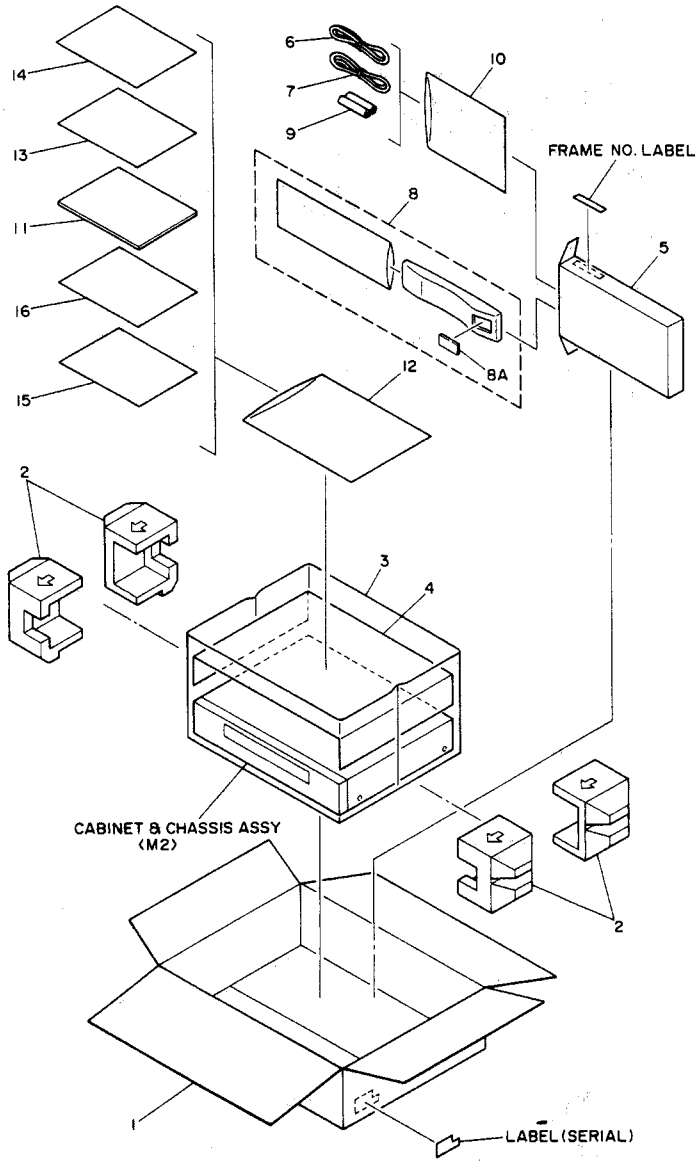
MODE / PIN No.	STOP (Half loading)	REW	FF
57	1.5	1.5	1.6
58	1.5	1.5	1.6
59	4.7	4.7	4.8
60	5.2	5.2	5.3
61	0	0	0
62	5.2	5.2	5.3
63	5.2	5.2	5.3
64	5.0	5.0	5.1
65	0.3	0.4	5.4
66	5.2	5.2	0.4
67	5.1	3.0	5.2
68	0	0	3.1
69	0	2.6	0
70	5.1	0	2.6
71	2.6	5.1	0
72	5.2	5.2	5.2
73	0.6	0.6	0.6
74	4.9	4.9	4.9
75	2.4	2.4	2.4
76	0.4	2.5	2.3
77	0	0	0
78	0	0	0
79	0	0	0
80	0	0	0

SECTION 5
PARTS LIST

SAFETY PRECAUTION

Parts identified by the ⚠ symbol are critical for safety. Replace only with specified part numbers.

5.1 PACKING ASSEMBLY <M1>



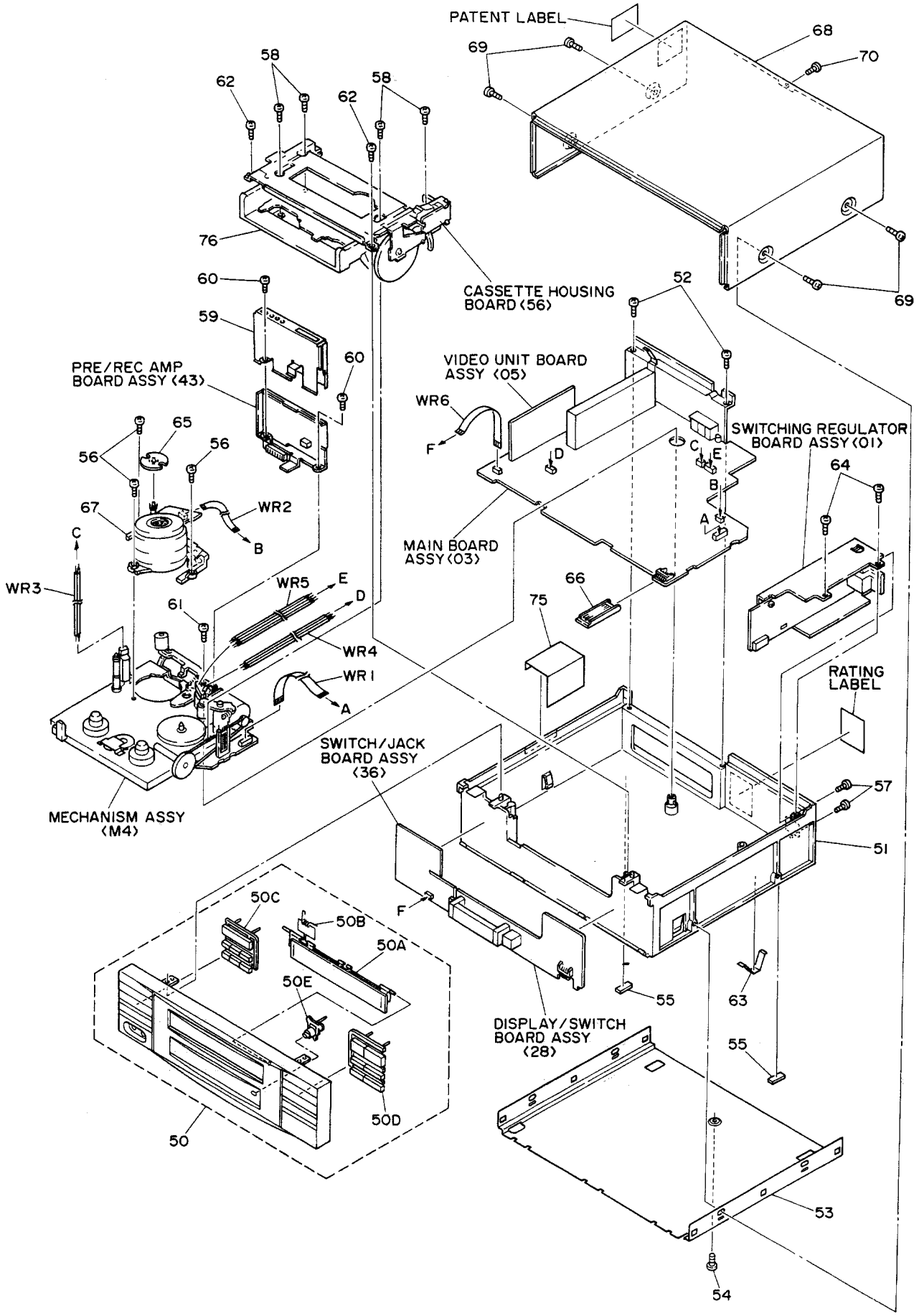
#⚠	REF No.	PART No.	PART NAME, DESCRIPTION

****

PACKING AND ACCESSORY ASSEMBLY <M1>

	1	PQ34670-2	PACKING CASE,J400U
		PQ34670-4	PACKING CASE,J400UC
	2	PQ34671A	CUSHION ASSY
	3	PQM30021-88	POLY BAG
	4	PQ41026-31	PROTECT SHEET
	5	PQ34715-3	CASE,ACCESSORY
⚠	6	QMP14H0-183A	POWER CORD
	7	PU59168-5	RF CABLE
⚠	8	PQ11533A	REMOTE CONTROLLER,J400U J400UC
	8A	PQ46061	CAP(BATTERY),J400U J400UC
	9	R6PRPA-2ST	BATTERY,X2
	10	QPGA020-02005	POLY BAG
	11	PU30425-1356	INSTRUCTIONS,J400U
⚠		PU30425-1364	INSTRUCTIONS,J400CU
	12	QPGA025-03505	POLY BAG
	13	BT-20071A	SER.NET CARD,J400UC
		BT-51006-1	REGIST.CARD,J400U
	14	BT-20025K	WARRANTY CARD,J400UC
⚠	15	PU33941-3-3	SAFETY CAUTION
	16	PU36560	CONECTION SHEET

5.2 CABINET AND CHASSIS ASSEMBLY <M2>



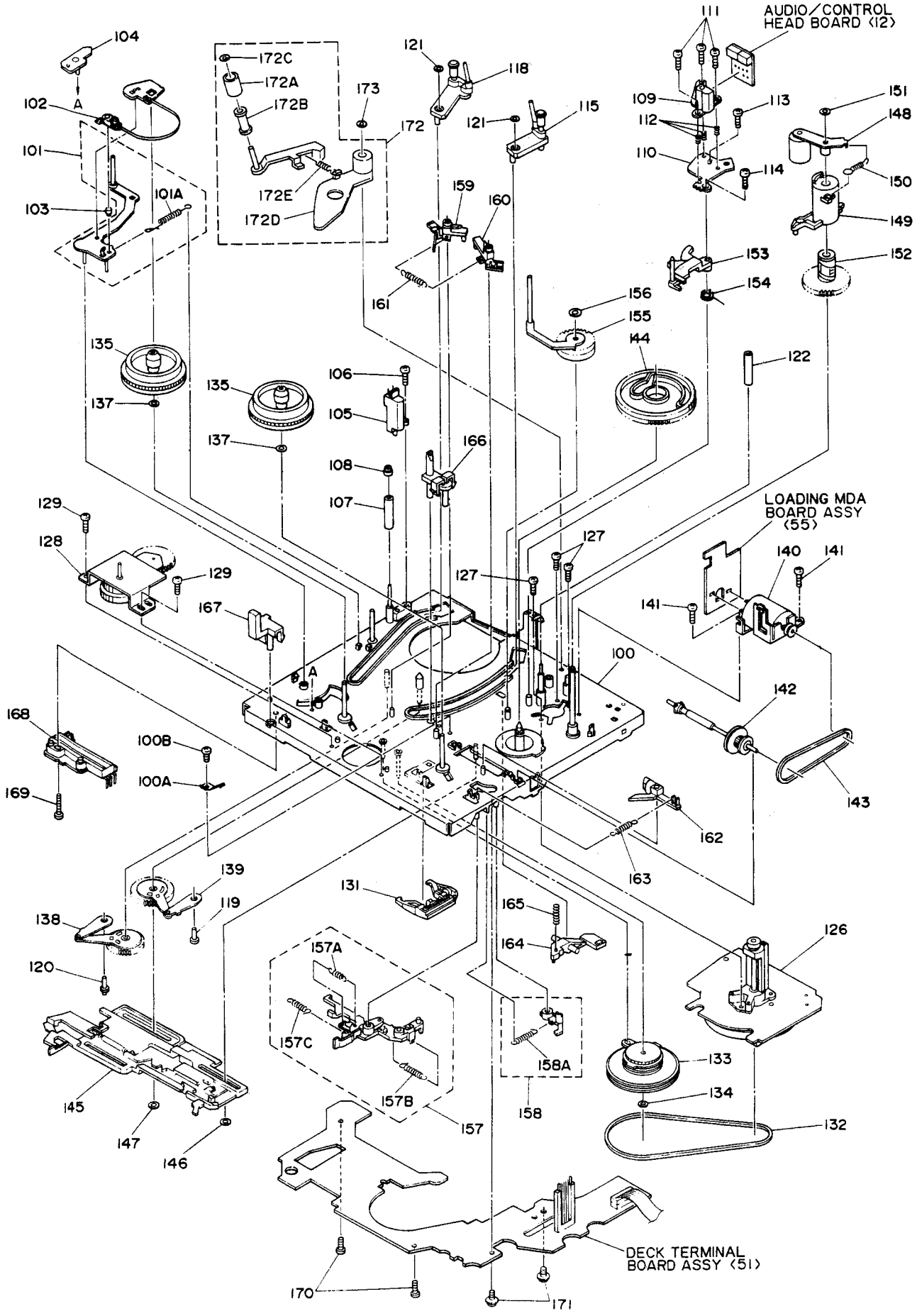
#⚠	REF No.	PART No.	PART NAME, DESCRIPTION

****

CABINET AND CHASSIS ASSEMBLY <M2>

	50	PQ11497A-2	FRONT PANEL ASSY,J400U J400UC
	50A	PQ21515-1-4	CASSETTE DOOR
	50B	PQ45704	TORSION SPRING
	50C	PQ21516-1-4	BUTTON(POWER)
	50D	PQ21517-1-3	BUTTON(OPE)
	50E	PQ34657	BUTTON(F.M)
⚠	51	PQ21508	BOTTOM CHASSIS
	52	SDSF3008Z	SCREW,X2 TERMINAL BOARD
⚠	53	PQ11515	BOTTOM COVER
	54	SDSF3008Z	SCREW
	55	PQ43013-3	FOOT,X2
	56	SPST2610Z	SCREW,X3 DRUM
	57	SDSF3008M	SCREW,X2 INLET
	58	SPST2608Z	SCREW,X4 CASSETTE HOUSING
	59	PQ21513	S.CASE(PRE.)
	60	SDSG2606Z	SCREW,X2 PRE
	61	PQ43831	SPECIAL SCREW,MECHA
	62	SDSF3008Z	SCREW,X2 CASSETTE HOUSING
	63	PQ34737	EARTH PLATE
	64	SDSF3008Z	SCREW,X2 P.S.ASSY
	65	PQ44230	INERTIA PLATE,MECHA
	66	PEMC0980	B TO B CONN,DISP/SW
	67	PDV2291A	DRUM ASSY
⚠	68	PQ11514	TOP COVER
	69	PQ43827	SPECIAL SCREW,X4 TOP COVER
	70	SDSF3008M	SCREW,TOP COVER
	75	PQ46122	SHIELD PLATE,B.CHASSIS
	76	PUS29672A	CASSETTE HOUSING ASSY
	WR1	PW30802-1618	WIRE,D/T
	WR2	PW30803-0434	WIRE,DRUM
	WR3	PW30701-36AAYY	WIRE,FE
	WR4	PW30702-42AAYY	WIRE,CTL
	WR5	PW30705-12AAYY	WIRE,AUDIO
	WR6	PW30802-0712	WIRE,PRE/REC

5.3 MECHANISM ASSEMBLY <M4>



MECHANISM ASSEMBLY <M4>

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION
100	PQ20650K-25	MAIN DECK ASSEMBLY
100A	PQ43849	EARTH PLATE
100B	SPST2604Z	SCREW
101	PQ43497K	TENSION ARM ASSY
101A	PQ43500	TENSION SPRING
102	PQ45023A-1	TENSION BAND ASSY
103	PQ43503-1-4	ADJUST PIN
104	PQ44246	TENTION BAND BRACKET-3
105	PEHE0237	FULL ERASE HEAD
106	SDSF2614Z	SCREW, F E HEAD
107	PQ43505-1-1	ROLLER
108	PQ43506	GUIDE POLE CAP
109	PEHE0182	AUDIO CONTROL HEAD
110	PQ43509	HEAD BASE
111	PQ43687A	SPECIAL SCREW,X3
112	PQM30002-192	COMPRESSION SPRING,X3
113	SPSF2608M	SCREW
114	SPSP2606Z	SCREW
115	PU61103-2-7	POLE BASE ASSY(TAKE UP)
118	PU61151-2-6	POLE BASE ASSY(SUPPLY)
119	PQ45895	STOPPER(T)
120	PQ45894	STOPPER(S)
121	PQM30017-41	SLIT WASHER,X2
122	PQ43675-1-5	TAPE GUARD
⚠ 126	PU61285	CAPSTAN MOTOR
127	SPSG2608Z	SCREW,X3
128	PU60618-1-3	IDLER GEAR UNIT
129	SPST2606Z	SCREW,X2
131	PQ43532B	CHANGE LEVER ASSEMBLY
132	PQM30003-24	TIMER BELT
133	PU60953-1-6	CLUTCH UNIT
134	PQM30017-8	SLIT WASHER
135	PQ46072A	REEL DISK ASSY,X2
137	PQM30018-54	SPACER,X2
138	PQ43537B	LOADING ARM ASSY (SUPLLY)
139	PQ43542D	LOADING ARM ASSY (TAKE UP)
140	PQ43676C-7	MODE MOTOR ASSY
141	SPSP3003Z	SCREW,X2
142	PQ43548A-2	WORM CLUTCH ASSY
143	PQM30003-23	BELT
144	PQ32413-1-6	CONTROL CAM
145	PQ43555C-10	PLATE ASSY
146	PQM30017-12	SLIT WASHER
147	PQM30017-8	SLIT WASHER
148	PQ43558C	PINCH ROLLER ARM ASSY
149	PQ32415	PINCH ROLLER PRESS LEVER
150	PQM30001-233	TENSION SPRING
151	PQM30017-12	SLIT WASHER
152	PQ32416-2	PINCH ROLLER CAM
153	PQ43567A-13	GUIDE ARM ASSY
154	PQ43569-1-3	TORSION SPRING
155	PQ45073A	HALF LOADING GEAR ASSY
156	PQM30017-13	SLIT WASHER
157	PQ43575A-5	CANCEL LEVER ASSY
157A	PQM30001-273	TENSION SPRING
157B	PQM30001-237	TENSION SPRING
157C	PQM30001-274	TENSION SPRING
158	PQ43578A-2	HOOK ASSY
158A	PQM30001-238	TENSION SPRING
159	PQ43580A-6	MAIN BRAKE ASSY(SUPPLY)
160	PQ43582A-2	MAIN BRAKE ASSY(TAKE UP)
161	PQM30001-251	TENSION SPRING
162	PQ43583A-3	SUB BRAKE ASSY (TAKE-UP)
163	PQM30001-235	TENSION SPRING
164	PQ43584A-5	CAPSTAN BRAKE ASSY
165	PQM30002-201	COMPRESSION SPRING
166	PQ21546	LED PRISM
167	PU61281	REC SAFETY SWITCH
168	PU60622-1-2	SLIDE SWITCH
169	SDSF2614Z	SCREW
170	SDST2616Z	SCREW,X2
171	GPSF2608Z	SCREW,X2
172	PQ46017A	CLEANER BASE ASSY
172A	PQ46019	CLEANER
172B	PQ46018	CLEANER ROLLER
172C	PQM30017-38	SLIT WASHER
172D	PQ34677	CLEANER LEVER
172E	PQM30001-363	TENSION SPRING
173	PQM30017-20	SLIT WASHER

5.4 ELECTRICAL PARTS LIST

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
**********				
			SWITCHING REGULATOR BOARD ASSY <01>	
	PWBA1	PB20623A-02	SWITCH REGULATOR BOARD ASSY	
	Q1	2SC4130-LF619	TRANSISTOR	
	Q2	2SC3616(MLK)	TRANSISTOR	
	Q31	2SC1740S(RS)	TRANSISTOR	
	D1	10E6-F2	DIODE	
	D2	10E6-F2	DIODE	
	D3	10E6-F2	DIODE	
	D4	10E6-F2	DIODE	
	D5	RD15ES-T1B3	DIODE	
	D6	1SS133	DIODE	
	D7	RD15ES-T1B3	DIODE	
	D8	1SS133	DIODE	
	D9	AU01	FR DIODE	
	D12	11ES2	DIODE	
	D31	AU01	FR DIODE	
	D32	AU01	FR DIODE	
	D34	AU01	FR DIODE	
	D36	AK04	SB DIODE	
	D37	AU01Z	FR DIODE	
	D38	1SS133	DIODE	
	D40	RD15ES-T1B1	ZENER DIODE	
	D41	RD6.2ES-T1B3	ZENER DIODE	
	D42	RD30ES-T1B1	ZENER DIODE	
⚠	R1	QRC122K-225E	RESISTOR	2.2MΩ,1/2W
	R2	QRD182J-823	RESISTOR	82KΩ,1/8W
	R3	QRD161J-563	RESISTOR	56KΩ,1/6W
	R4	QRD161J-683	RESISTOR	68KΩ,1/6W
	R5	QRD161J-683	RESISTOR	68KΩ,1/6W
	R8	QRX014J-R39Z	MF RESISTOR	0.39Ω,1W
	R9	QRG029J-683G	OMF RESISTOR	68KΩ,2W
	R10	QRG029J-101A	OMF RESISTOR	100Ω,2W
	R11	QRD161J-122	RESISTOR	1.2KΩ,1/6W
	R14	QRD161J-561	RESISTOR	560Ω,1/6W
	R15	QRD161J-473	RESISTOR	47KΩ,1/6W
	R31	QRX014J-4R7Z	MF RESISTOR	4.7Ω,1W
⚠	R32	QRZ0077-101X	FUSIBLE RESISTOR	100Ω,1/4W
	R33	QRG02DJ-222X	OMF RESISTOR	2.2KΩ,2W
	R34	QRV144F-4870AY	CMF RESISTOR	487Ω,1/4W
	R35	QRD161J-471	RESISTOR	470Ω,1/6W
	R36	QRV144F-3740AY	CMF RESISTOR	374Ω,1/4W
	R37	QRD161J-122	RESISTOR	1.2KΩ,1/6W
⚠	C2	QFZ9022-683	MM CAPACITOR	0.068μF
⚠	C4	QCZ9016-101K	CAPACITOR	100pF
⚠	C5	QCZ9016-101K	CAPACITOR	100pF
	C10	QETM2DM-826R	E CAPACITOR	82μF,200V
	C12	QETC1HM-105	E CAPACITOR	1μF,50V
	C13	QCZ0212-472	CAPACITOR	0.0047μF,1KV
	C14	QCZ0213-101Z	CAPACITOR	100pF,1KV
	C16	QFLA1HJ-103Z	M CAPACITOR	0.01μF,50V
	C21	QFV11HJ-104	MM CAPACITOR	0.1μF,50V
	C31	QETC1JM-226	E CAPACITOR	22μF,63V
	C32	QEGB1CM-477	E CAPACITOR	470μF,16V
	C33	QEGB1AM-477	E CAPACITOR	470μF,10V
	C34	QETC1HM-226	E CAPACITOR	22μF,50V
	C35	QEGB1AM-107	E CAPACITOR	100μF,10V
	C36	QETB1AM-477	E CAPACITOR	470μF,10V
	C37	QETB1CM-477	E CAPACITOR	470μF,16V
	C38	QETC1HM-474	E CAPACITOR	0.47μF,50V
	C39	QFLA1HJ-103Z	M CAPACITOR	0.01μF,50V
	L31	PELN0687	COIL	33μH
	L32	PELN0695-330K	COIL	33μH
⚠	PC1	PC817	PH COUPLER	
⚠	PC2	PC817	PH COUPLER	
⚠	T1	PU60978-2	SW TRANS	
⚠	AO1	PEMC0973-02	AC INLET	
	BKT1	PQ21514-1-2	TRANS BRACKET	
⚠	FC1	PEMC0965-Z	FUSE CLIP	
⚠	FC2	PEMC0965-Z	FUSE CLIP	
⚠	LF2	PELN0701	LINE FILTER	
	SCW1	SDST3006Z	SCREW,X2 BOARD-BRACKET	
	CN1	PEMC0978-110	B TO B CONN	
⚠	CP1	ICP-N20	CIRCUIT PROTECTOR	
⚠	F1	QMF51N2-R70J1	FUSE	0.7A,AC250V
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			MAIN BOARD ASSEMBLY <03><43>	
	PWBA1	PB10730A1-02	MAIN BOARD ASSEMBLY	
	SW1	PU55854	SLIDE SWITCH,RF CH SW	
	ETH1	PQ46090	EARTH PLATE	
	JA1	PU60612	EARPHONE JACK,RAE IN/OUT	
	JA2	PEMC0760-04	PIN JACK,VIDEO IN/OUT	
	JA3	PEMC0990-03	PIN JACK(SW),AUDIO IN/OUT	
	JA4	PU60833-3	PIN JACK,AUDIO OUT	
	SCW1	SDSF3008Z	SCREW,X2 TERMINAL BOARD	
	SPC1	PQ46108	SPACER	
⚠	TB1	PQ21511	TERMINAL BOARD	
			– TUNER/IF SECTION –	
⚠	TNR1	PERF0119	TUNER UNIT	
	Q1	2SC3243D,E	TRANSISTOR	
	Q2	DTC114TS	TRANSISTOR	
	Q4	2SC1740S(RS)	TRANSISTOR	
	Q5	2SC1740S(RS)	TRANSISTOR	
	Q6	2SA933S(RS)	TRANSISTOR	
	Q7	2SC1740S(RS)	TRANSISTOR	
	D1	HZ30-2L	ZENER DIODE	
	D2	MTZ10B	ZENER DIODE	
	D3	1SS133	DIODE	
	D4	1SS133	DIODE	

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
R5	QRD161J-271	RESISTOR	270Ω,1/6W
R6	QRD161J-101	RESISTOR	100Ω,1/6W
R7	QRSA08J-682YN	RESISTOR	6.8KΩ,1/10W
R8	QRSA08J-242YN	RESISTOR	2.4KΩ,1/10W
R13	QRSA08J-102YN	RESISTOR	1KΩ,1/10W
R30	QRSA08J-471YN	RESISTOR	470Ω,1/10W
R31	QRSA08J-184YN	RESISTOR	180KΩ,1/10W
R32	QRSA08J-223YN	RESISTOR	22KΩ,1/10W
R33	QRSA08J-122YN	RESISTOR	1.2KΩ,1/10W
R34	QRSA08J-822YN	RESISTOR	8.2KΩ,1/10W
R36	QRSA08J-121YN	RESISTOR	120Ω,1/10W
R37	QRSA08J-223YN	RESISTOR	22KΩ,1/10W
R38	QRSA08J-223YN	RESISTOR	22KΩ,1/10W
R39	QRSA08J-123YN	RESISTOR	12KΩ,1/10W
R40	QRSA08J-822YN	RESISTOR	8.2KΩ,1/10W
C1	QETC1CM-476	E CAPACITOR	47μF,16V
C3	QCYA1HK-222	CAPACITOR	0.0022μF,50V
C5	QETC1HM-106	E CAPACITOR	10μF,50V
C10	QETC1CM-476	E CAPACITOR	47μF,16V
C14	QETC1CM-106	E CAPACITOR	10μF,16V
C15	QFN31HK-563	M CAPACITOR	0.056μF,50V
C16	QFN31HK-154	M CAPACITOR	0.15μF,50V
C19	QCYA1EK-103	CAPACITOR	0.01μF,25V
C30	QETF1HM-104	E CAPACITOR	0.1μF,50V
C31	QCSA1HJ-471	CAPACITOR	470pF,50V
C33	QCYA1HK-102	CAPACITOR	0.001μF,50V
C34	QCYA1EK-223	CAPACITOR	0.022μF,25V
C35	QETC1HM-474	E CAPACITOR	0.47μF,50V
C36	QETF1CM-476	E CAPACITOR	47μF,16V
T1	PELN0806	COIL	

– VIDEO SECTION –

Q203	2SA933S(RS)	TRANSISTOR	
	or 2SA1267(YG)-TJK	TRANSISTOR	
Q204	2SA933S(RS)	TRANSISTOR	
	or 2SA1267(YG)-TJK	TRANSISTOR	
D202	1SS133	DIODE	
D203	1SS133	DIODE	
D207	1SS133	DIODE	
R201	QRSA08J-472YN	RESISTOR	4.7KΩ,1/10W
R202	QRSA08J-472YN	RESISTOR	4.7KΩ,1/10W
R203	QRSA08J-223YN	RESISTOR	22KΩ,1/10W
R204	QRSA08J-222YN	RESISTOR	2.2KΩ,1/10W
R210	QRD123J-391SX	RESISTOR	390Ω,1/2W
R211	QRSA08J-153YN	RESISTOR	15KΩ,1/10W
R212	QRSA08J-103YN	RESISTOR	10KΩ,1/10W
R213	QRSA08J-102YN	RESISTOR	1KΩ,1/10W
R215	QRSA08J-750YN	RESISTOR	75Ω,1/10W
R216	NRVA02D-71R5AY	RESISTOR	71.5Ω,1/10W
R217	QRSA08J-102YN	RESISTOR	1KΩ,1/10W
R219	QRSA08J-391YN	RESISTOR	390Ω,1/10W
R221	QRD161J-472	RESISTOR	4.7KΩ,1/6W
C202	QETC1EM-475	E CAPACITOR	4.7μF,25V
C204	QCFA1HZ-103	CAPACITOR	0.01μF,50V
C205	QETC0JM-108	E CAPACITOR	1000μF,6.3V
C206	QETC0JM-476	E CAPACITOR	47μF,6.3V
C207	QETF1CM-476	E CAPACITOR	47μF,16V
C211	QCVB1CN-103	CAPACITOR	0.01μF,16V
L202	PELN0530-101JW	COIL	100μH
CN201	PEMC0977-016	FLOATING B TO B	

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION	

– AUDIO SECTION –

⚠ IC301	BA7790LS	IC	
Q303	2SC1740S(QR)	TRANSISTOR	
	or 2SC3199(YG)-TJK	TRANSISTOR	
Q304	2SA937(QR)	TRANSISTOR	
	or 2SA1561(QR)	TRANSISTOR	
Q305	2SA937(QR)	TRANSISTOR	
	or 2SA1561(QR)	TRANSISTOR	
D303	1SS133	DIODE	
R317	QRSA08J-102YN	RESISTOR	1KΩ,1/10W
R318	QRSA08J-102YN	RESISTOR	1KΩ,1/10W
R321	QRSA08J-100YN	RESISTOR	10Ω,1/10W
R322	QRSA08J-273YN	RESISTOR	27KΩ,1/10W
R323	QRSA08J-472YN	RESISTOR	4.7KΩ,1/10W
R324	QRD161J-472	RESISTOR	4.7KΩ,1/6W
R325	QRSA08J-123YN	RESISTOR	12KΩ,1/10W
R326	QRSA08J-3R3YN	RESISTOR	3.3Ω,1/10W
R327	QRSA08J-820YN	RESISTOR	82Ω,1/10W
R328	QRSA08J-273YN	RESISTOR	27KΩ,1/10W
R329	QRSA08J-123YN	RESISTOR	12KΩ,1/10W
R330	QRSA08J-432YN	RESISTOR	4.3KΩ,1/10W
R331	QRSA08J-681YN	RESISTOR	680Ω,1/10W
R332	QRSA08J-391YN	RESISTOR	390Ω,1/10W
R333	QRSA08J-822YN	RESISTOR	8.2KΩ,1/10W
R334	QRSA08J-121YN	RESISTOR	120Ω,1/10W
R335	QRSA08J-273YN	RESISTOR	27KΩ,1/10W
R336	QRSA08J-820YN	RESISTOR	82Ω,1/10W
R337	QRSA08J-274YN	RESISTOR	270KΩ,1/10W
R338	QRSA08J-822YN	RESISTOR	8.2KΩ,1/10W
R339	QRSA08J-682YN	RESISTOR	6.8KΩ,1/10W
R340	QRSA08J-472YN	RESISTOR	4.7KΩ,1/10W
R341	QRSA08J-392YN	RESISTOR	3.9KΩ,1/10W
R342	QRSA08J-475YN	RESISTOR	4.7MΩ,1/10W
R343	QRSA08J-183YN	RESISTOR	18KΩ,1/10W
R344	QRSA08J-473YN	RESISTOR	47KΩ,1/10W
R345	QRSA08J-103YN	RESISTOR	10KΩ,1/10W
R346	QRD161J-153	RESISTOR	15KΩ,1/6W
R347	QRSA08J-473YN	RESISTOR	47KΩ,1/10W
R348	QRSA08J-183YN	RESISTOR	18KΩ,1/10W
R349	QRSA08J-223YN	RESISTOR	22KΩ,1/10W
R350	QRD161J-203	RESISTOR	20KΩ,1/6W
R351	QRSA08J-473YN	RESISTOR	47KΩ,1/10W
R352	QRSA08J-273YN	RESISTOR	27KΩ,1/10W
R374	QRD161J-102	RESISTOR	1KΩ,1/6W
C313	QCYA1HK-331	CAPACITOR	330pF,50V
C314	QFLC1HJ-823Z	M CAPACITOR	0.082μF,50V
C315	QEKF1CM-106	E CAPACITOR	10μF,16V
C316	QCYA1HK-472	CAPACITOR	0.0047μF,50V
C317	QCYA1HK-223	CAPACITOR	0.022μF,50V
C318	QCYA1HK-222	CAPACITOR	0.0022μF,50V
C319	QERF1CM-476	E CAPACITOR	47μF,16V
C320	QCC11EJ-103	CAPACITOR	0.01μF,25V
C321	QEKF1HM-105	E CAPACITOR	1μF,50V
C322	QFV11HJ-473	MM CAPACITOR	0.047μF,50V
C323	QCYA1HK-681	CAPACITOR	680pF,50V
C324	PU60550-105	E CAPACITOR	1μF
C325	QERF1AM-226	E CAPACITOR	22μF,10V
C326	QCYA1HK-123	CAPACITOR	0.012μF,50V

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
C327	QERF1HM-104	E CAPACITOR	0.1μF,50V
C328	QERF1AM-226	E CAPACITOR	22μF,10V
C329	QERF1HM-104	E CAPACITOR	0.1μF,50V
C330	QERF1HM-104	E CAPACITOR	0.1μF,50V
C331	QERF1AM-336	E CAPACITOR	33μF,10V
C345	QCFA1HZ-103	CAPACITOR	0.01μF,50V
L303	PU58308-123J	COIL	12mH
⚠ T301	PELN0832	OSC TRANSFORMER	
CN301	PU60910-4	CONNECTOR	
CN302	PU60910-2	CONNECTOR	

– SERVO SECTION –

IC401	JCP0039	IC	
D401	1SS133	DIODE	
D402	1SS133	DIODE	
D403	1SS133	DIODE	
R401	QRSA08J-122YN	RESISTOR	1.2KΩ,1/10W
R402	QRSA08J-102YN	RESISTOR	1KΩ,1/10W
R403	QRSA08J-105YN	RESISTOR	1MΩ,1/10W
R405	QRSA08J-224YN	RESISTOR	220KΩ,1/10W
R406	QRSA08J-102YN	RESISTOR	1KΩ,1/10W
R407	QRSA08J-102YN	RESISTOR	1KΩ,1/10W
R408	QRSA08J-102YN	RESISTOR	1KΩ,1/10W
R409	QRSA08J-102YN	RESISTOR	1KΩ,1/10W
R410	QRSA08J-683YN	RESISTOR	68KΩ,1/10W
R411	QRSA08J-105YN	RESISTOR	1MΩ,1/10W
R412	QRSA08J-104YN	RESISTOR	100KΩ,1/10W
R413	QRD161J-222	RESISTOR	2.2KΩ,1/6W
R414	QRSA08J-272YN	RESISTOR	2.7KΩ,1/10W
R415	QRSA08J-123YN	RESISTOR	12KΩ,1/10W
R416	QRSA08J-123YN	RESISTOR	12KΩ,1/10W
R417	QRSA08J-473YN	RESISTOR	47KΩ,1/10W
R418	QRSA08J-105YN	RESISTOR	1MΩ,1/10W
R419	QRSA08J-473YN	RESISTOR	47KΩ,1/10W
R421	QRSA08J-334YN	RESISTOR	330KΩ,1/10W
R423	QRSA08J-105YN	RESISTOR	1MΩ,1/10W
R424	QRSA08J-393YN	RESISTOR	39KΩ,1/10W
R428	QRSA08J-824YN	RESISTOR	820KΩ,1/10W
R429	QRSA08J-103YN	RESISTOR	10KΩ,1/10W
R430	QRSA08J-105YN	RESISTOR	1MΩ,1/10W
R431	QRSA08J-124YN	RESISTOR	120KΩ,1/10W
R432	QRSA08J-103YN	RESISTOR	10KΩ,1/10W
R436	QRSA08J-102YN	RESISTOR	1KΩ,1/10W
R438	QRSA08J-104YN	RESISTOR	100KΩ,1/10W
C401	QCYA1HK-102	CAPACITOR	0.001μF,50V
C402	QERF1AM-226	E CAPACITOR	22μF,10V
C403	QERF1AM-226	E CAPACITOR	22μF,10V
C404	QCSA1HJ-101	CAPACITOR	100pF,50V
C405	QCYA1HK-102	CAPACITOR	0.001μF,50V
C407	QCYA1HK-102	CAPACITOR	0.001μF,50V
C408	QCYA1EK-563	CAPACITOR	0.056μF,25V
C409	QCYA1HK-102	CAPACITOR	0.001μF,50V
C410	QCYA1EK-103	CAPACITOR	0.01μF,25V
C411	QCYA1EK-103	CAPACITOR	0.01μF,25V
C412	QERF1CM-106	E CAPACITOR	10μF,16V
C413	QCC11CJ-104	CAPACITOR	0.1μF,16V
C414	QCYA1HK-472	CAPACITOR	0.0047μF,50V
C415	QERF1EM-475	E CAPACITOR	4.7μF,25V
C416	QERF1EM-475	E CAPACITOR	4.7μF,25V
C417	QERF1CM-106	E CAPACITOR	10μF,16V
C418	QERF1CM-106	E CAPACITOR	10μF,16V

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
C419	QCYA1EK-473	CAPACITOR	0.047μF,25V
C420	QENA1HM-105	TF CAPACITOR	1μF,50V
C421	QCSA1HJ-101	CAPACITOR	100pF,50V
CN401	PU60910-3	CONNECTOR	
CN402	PEMC0915-004	FFC CONNECTOR	
⚠ CP401	ICP-N15	CIRCUIT PROTECTOR	

– SYSTEM CONTROL SECTION –

IC601	HD6433926A03F	IC	
IC602	93C46/P	IC	
	or CAT93C46P	IC	
	or ST93C46AB1	IC	
IC603	S-80740AN-Z	IC	
	or RE5VA40A	IC	
Q601	DTC124EF	TRANSISTOR	
Q602	DTC124ES	TRANSISTOR	
Q603	DTC124EF	TRANSISTOR	
Q605	DTC124ES	TRANSISTOR	
Q606	DTC124EF	TRANSISTOR	
Q608	DTC143EF	TRANSISTOR	
D601	RB721Q	DIODE	
D602	RB721Q	DIODE	
D603	11ES2	DIODE	
D604	11ES2	DIODE	
D605	1SS133	DIODE	
D606	1SS133	DIODE	
D607	1SS133	DIODE	
D608	1SS133	DIODE	
D610	1SS133	DIODE	
D611	1SS133	DIODE	
R601	QRD161J-472	RESISTOR	4.7KΩ,1/6W
R603	QRD161J-104	RESISTOR	100KΩ,1/6W
R604	QRSA08J-102YN	RESISTOR	1KΩ,1/10W
R605	QRSA08J-105YN	RESISTOR	1MΩ,1/10W
R606	QRSA08J-472YN	RESISTOR	4.7KΩ,1/10W
R607	QRSA08J-102YN	RESISTOR	1KΩ,1/10W
R608	QRSA08J-472YN	RESISTOR	4.7KΩ,1/10W
R609	QRD161J-472	RESISTOR	4.7KΩ,1/6W
R610	QRD161J-821	RESISTOR	820Ω,1/6W
R611	QRD161J-472	RESISTOR	4.7KΩ,1/6W
R612	QRD161J-472	RESISTOR	4.7KΩ,1/6W
R613	QRD161J-152	RESISTOR	1.5KΩ,1/6W
R614	QRSA08J-0R0YN	RESISTOR	0Ω,1/10W
R615	QRD161J-472	RESISTOR	4.7KΩ,1/6W
R618	QRSA08J-472YN	RESISTOR	4.7KΩ,1/10W
R621	QRD161J-102	RESISTOR	1KΩ,1/6W
R622	QRD161J-681	RESISTOR	680Ω,1/6W
R625	QRSA08J-152YN	RESISTOR	1.5KΩ,1/10W
R626	QRSA08J-681YN	RESISTOR	680Ω,1/10W
R628	QRD161J-472	RESISTOR	4.7KΩ,1/6W
R629	QRD161J-472	RESISTOR	4.7KΩ,1/6W
R630	QRSA08J-105YN	RESISTOR	1MΩ,1/10W
R631	QRSA08J-471YN	RESISTOR	470Ω,1/10W
R632	QRD161J-333	RESISTOR	33KΩ,1/6W
R634	QRSA08J-472YN	RESISTOR	4.7KΩ,1/10W
R635	QRSA08J-472YN	RESISTOR	4.7KΩ,1/10W
R636	QRSA08J-472YN	RESISTOR	4.7KΩ,1/10W
R637	QRSA08J-472YN	RESISTOR	4.7KΩ,1/10W
R638	QRSA08J-0R0YN	RESISTOR	0Ω,1/10W
R639	QRD161J-102	RESISTOR	1KΩ,1/6W
R640	QRSA08J-472YN	RESISTOR	4.7KΩ,1/10W

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
R641	QRSA08J-472YN	RESISTOR	4.7KΩ,1/10W
R643	QRD161J-472	RESISTOR	4.7KΩ,1/6W
R645	QRSA08J-562YN	RESISTOR	5.6KΩ,1/10W
R646	QRD161J-332	RESISTOR	3.3KΩ,1/6W
R647	QRD161J-332	RESISTOR	3.3KΩ,1/6W
R648	QRSA08J-102YN	RESISTOR	1KΩ,1/10W
R651	QRSA08J-102YN	RESISTOR	1KΩ,1/10W
R652	QRSA08J-472YN	RESISTOR	4.7KΩ,1/10W
R653	QRSA08J-102YN	RESISTOR	1KΩ,1/10W
R654	QRSA08J-272YN	RESISTOR	2.7KΩ,1/10W
R655	QRSA08J-102YN	RESISTOR	1KΩ,1/10W
R656	QRD161J-472	RESISTOR	4.7KΩ,1/6W
R657	QRD161J-104	RESISTOR	100KΩ,1/6W
R658	QRSA08J-472YN	RESISTOR	4.7KΩ,1/10W
R659	QRSA08J-472YN	RESISTOR	4.7KΩ,1/10W
R660	QRSA08J-0R0YN	RESISTOR	0Ω,1/10W
R661	QRD161J-472	RESISTOR	4.7KΩ,1/6W
R666	QRSA08J-333YN	RESISTOR	33KΩ,1/10W
R667	QRSA08J-153YN	RESISTOR	15KΩ,1/10W
R668	QRSA08J-103YN	RESISTOR	10KΩ,1/10W
R669	QRSA08J-103YN	RESISTOR	10KΩ,1/10W
R670	QRD161J-103	RESISTOR	10KΩ,1/6W
R671	QRSA08J-153YN	RESISTOR	15KΩ,1/10W
R674	QRSA08J-472YN	RESISTOR	4.7KΩ,1/10W
R675	QRSA08J-472YN	RESISTOR	4.7KΩ,1/10W
R676	QRD161J-472	RESISTOR	4.7KΩ,1/6W
R680	QRD161J-103	RESISTOR	10KΩ,1/6W
R682	QRD161J-473	RESISTOR	47KΩ,1/6W
R683	QRD161J-333	RESISTOR	33KΩ,1/6W
R687	QRD161J-104	RESISTOR	100KΩ,1/6W
R688	QRSA08J-151YN	RESISTOR	150Ω,1/10W
R689	QRSA08J-151YN	RESISTOR	150Ω,1/10W
R690	QRSA08J-102YN	RESISTOR	1KΩ,1/10W
R691	QRSA08J-471YN	RESISTOR	470Ω,1/10W
R693	QRSA08J-102YN	RESISTOR	1KΩ,1/10W
C601	QCYA1EJ-103	CAPACITOR	0.01μF,25V
C602	QERF1CM-106	E CAPACITOR	10μF,16V
C603	QCYA1EJ-103	CAPACITOR	0.01μF,25V
C605	QERF0JM-107	E CAPACITOR	100μF,6.3V
C606	QETC0JM-108	E CAPACITOR	1000μF,6.3V
C607	QCVB1CN-103	CAPACITOR	0.01μF,16V
C608	QETC0JM-336	E CAPACITOR	33μF,6.3V
C613	QCTA1CH-471	CAPACITOR	470pF,16V
C614	QCTA1CH-470	CAPACITOR	47pF,16V
C618	QETC0JM-477	E CAPACITOR	470μF,6.3V
C630	QCC11CJ-104	CAPACITOR	0.1μF,16V
L601	PU54223-1R0J	COIL	1μH
⚠ CF601	PEVB0497	RESONATOR	
CN601	PEMC0916-016	FFC CONNECTOR	
CN802	PEMC0979	B TO B CONN	
⚠ CP601	ICP-N25	CIRCUIT PROTECTOR	

– ON SCREEN DISPLAY SECTION –

IC901	UPD6459GT-601-X	IC	
Q901	2SA933S(RS)	TRANSISTOR	
	or 2SA1267(YG)-TJK	TRANSISTOR	
Q904	2SC4081(RS)	TRANSISTOR	
R901	QRSA08J-681YN	RESISTOR	680Ω,1/10W
R902	QRSA08J-682YN	RESISTOR	6.8KΩ,1/10W
R903	QRSA08J-822YN	RESISTOR	8.2KΩ,1/10W
R904	QVPA606-473Z	V RESISTOR,Fh	47KΩ,16W

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
R905	QRD161J-224	RESISTOR	220KΩ,1/6W
R906	QRSA08J-105YN	RESISTOR	1MΩ,1/10W
R909	QRSA08J-102YN	RESISTOR	1KΩ,1/10W
R910	QRD161J-471	RESISTOR	470Ω,1/6W
R917	QRSA08J-102YN	RESISTOR	1KΩ,1/10W
R918	QRSA08J-101YN	RESISTOR	100Ω,1/10W
R919	QRSA08J-101YN	RESISTOR	100Ω,1/10W
R920	QRSA08J-154YN	RESISTOR	150KΩ,1/10W
R921	QRSA08J-472YN	RESISTOR	4.7KΩ,1/10W
R925	QRSA08J-472YN	RESISTOR	4.7KΩ,1/10W
R926	QRSA08J-473YN	RESISTOR	47KΩ,1/10W
R929	QRSA08J-102YN	RESISTOR	1KΩ,1/10W
R930	QRSA08J-0R0YN	RESISTOR	0Ω,1/10W
R931	QRD161J-222	RESISTOR	2.2KΩ,1/6W
C901	QETF0JM-107	E CAPACITOR	100μF,6.3V
C902	QCFA1CZ-104	CAPACITOR	0.1μF,16V
C903	QCFA1CZ-104	CAPACITOR	0.1μF,16V
C906	QEKF1HM-105	E CAPACITOR	1μF,50V
C907	QCYA1EK-103	CAPACITOR	0.01μF,25V
C909	QCYA1HK-472	CAPACITOR	0.0047μF,50V
C910	QETF1HM-335	E CAPACITOR	3.3μF,50V
C911	QCTA1CH-330	CAPACITOR	33pF,16V
C912	QCTA1CH-330	CAPACITOR	33pF,16V
C913	QCTA1CH-330	CAPACITOR	33pF,16V
C915	QCTA1CH-220	CAPACITOR	22pF,16V
C916	QEKF1CM-106	E CAPACITOR	10μF,16V
C917	QCTA1CH-100	CAPACITOR	10pF,16V
C922	QCTA1CH-471	CAPACITOR	470pF,16V
C923	QCTA1CH-101	CAPACITOR	100pF,16V
C924	QCTA1CH-101	CAPACITOR	100pF,16V
C925	QCTA1CH-101	CAPACITOR	100pF,16V
L901	PU48530-101J	COIL	100μH
L902	PU58333-220J	COIL	22μH
⚠ X901	PEVB0442	CRYSTAL RESONATOR	

– REGULATOR SECTION –

Q801	2SC3616(MLK)	TRANSISTOR	
Q802	2SD2166	TRANSISTOR	
Q803	2SC1740S	TRANSISTOR	
	or 2SC2785(J-E)-T	TRANSISTOR	
Q804	DTA114ES	TRANSISTOR	
	or KRA102M	TRANSISTOR	
D802	RD5.1JSB2	DIODE	
D803	1SS133	DIODE	
R801	QRD161J-471	RESISTOR	470Ω,1/6W
R802	QRD161J-473	RESISTOR	47KΩ,1/6W
R803	QRSA08J-103YN	RESISTOR	10KΩ,1/10W
R804	QRD161J-471	RESISTOR	470Ω,1/6W
R805	PEVM0108-471Z	V RESISTOR,SWD 5V	470Ω
R806	QRD161J-471	RESISTOR	470Ω,1/6W
R808	QRSA08J-102YN	RESISTOR	1KΩ,1/10W
R809	QRSA08J-104YN	RESISTOR	100KΩ,1/10W
R811	QRSA08J-102YN	RESISTOR	1KΩ,1/10W
C801	QETF0JM-107	E CAPACITOR	100μF,6.3V
C802	QETF1CM-106	E CAPACITOR	10μF,16V
C803	QETC1CM-107	E CAPACITOR	100μF,16V
C804	QCYA1HJ-102	CAPACITOR	0.001μF,50V
L801	PU48530-101K	COIL	100μH
CN801	PEMC0974	B TO B CONN	
CN810	PEMC1007-007	FFC CONNECTOR	

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION	

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PRE/REC AMP BOARD ASSEMBLY <43>

PWBA1	PB10730A2-01	PRE/REC BOARD ASSEMBLY	
IC501	AN3389SB-XE	IC	
Q503	2SC4081(QRS)	TRANSISTOR	
Q504	2SC4081(QRS)	TRANSISTOR	
Q505	2SA1576(QRS)	TRANSISTOR	
Q506	2SC4081(QRS)	TRANSISTOR	
Q507	2SC4081(QRS)	TRANSISTOR	
Q508	DTC144WU	TRANSISTOR	
D501	1SS133	DIODE	
D505	1SS133	DIODE	
D508	1SS133	DIODE	
R501	QRSA08J-331YN	RESISTOR	330Ω,1/10W
R509	QRSA08J-222YN	RESISTOR	2.2KΩ,1/10W
R510	QRSA08J-751YN	RESISTOR	750Ω,1/10W
R514	QRSA08J-681YN	RESISTOR	680Ω,1/10W
R515	QRSA08J-102YN	RESISTOR	1KΩ,1/10W
R516	QRSA08J-102YN	RESISTOR	1KΩ,1/10W
R517	QRSA08J-222YN	RESISTOR	2.2KΩ,1/10W
R518	QRSA08J-222YN	RESISTOR	2.2KΩ,1/10W
R519	QRSA08J-391YN	RESISTOR	390Ω,1/10W
R520	QRSA08J-391YN	RESISTOR	390Ω,1/10W
R521	QRSA08J-562YN	RESISTOR	5.6KΩ,1/10W
R522	QRSA08J-222YN	RESISTOR	2.2KΩ,1/10W
R523	QRSA08J-561YN	RESISTOR	560Ω,1/10W
R524	QRSA08J-821YN	RESISTOR	820Ω,1/10W
R525	QRSA08J-561YN	RESISTOR	560Ω,1/10W
R526	QRSA08J-122YN	RESISTOR	1.2KΩ,1/10W
R527	QRSA08J-561YN	RESISTOR	560Ω,1/10W
R528	QRSA08J-681YN	RESISTOR	680Ω,1/10W
R530	QRSA08J-332YN	RESISTOR	3.3KΩ,1/10W
R531	QRSA08J-102YN	RESISTOR	1KΩ,1/10W
R533	QRSA08J-821YN	RESISTOR	820Ω,1/10W
R535	QRSA08J-102YN	RESISTOR	1KΩ,1/10W
R536	NRVA62D-333N	RESISTOR	33KΩ,1/16W
R537	QRSA08J-104YN	RESISTOR	100KΩ,1/10W
R539	QRD161J-334	RESISTOR	330KΩ,1/6W
R541	QRSA08J-271YN	RESISTOR	270Ω,1/10W
R542	QRSA08J-271YN	RESISTOR	270Ω,1/10W
R543	QRSA08J-241YN	RESISTOR	240Ω,1/10W
R544	QRSA08J-301YN	RESISTOR	300Ω,1/10W
C504	QCFA1HZ-103	CAPACITOR	0.01μF,50V
C505	QCFA1HZ-103	CAPACITOR	0.01μF,50V
C506	QCBB1HJ-102	CAPACITOR	0.001μF,50V
C507	QCFA1HZ-103	CAPACITOR	0.01μF,50V
C508	QCSA1HJ-150	CAPACITOR	15pF,50V
C509	QCFA1HZ-103	CAPACITOR	0.01μF,50V
C510	QCSA1HJ-330	CAPACITOR	33pF,50V
C511	QCFA1HZ-103	CAPACITOR	0.01μF,50V
C512	QCSA1HJ-820	CAPACITOR	82pF,50V
C513	QCSA1HJ-331	CAPACITOR	330pF,50V
C514	QCSA1HJ-820	CAPACITOR	82pF,50V
C516	QCFA1CZ-104	CAPACITOR	0.1μF,16V
C517	QCVB1CN-103	CAPACITOR	0.01μF,16V
C518	QCSA1HJ-391	CAPACITOR	390pF,50V
C521	QCFA1HZ-103	CAPACITOR	0.01μF,50V
C522	PECA0780-104Z	M CAPACITOR	
C523	QCFA1HZ-333	CAPACITOR	0.033μF,50V
C524	QCSA1HJ-560	CAPACITOR	56pF,50V

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
C525	QCSA1HJ-560	CAPACITOR	56pF,50V
C526	QCFA1HZ-333	CAPACITOR	0.033μF,50V
C527	QCFA1HZ-103	CAPACITOR	0.01μF,50V
C528	QCFA1HZ-103	CAPACITOR	0.01μF,50V
C529	QCFA1HZ-333	CAPACITOR	0.033μF,50V
C530	QCSA1HJ-390	CAPACITOR	39pF,50V
C531	QCSA1HJ-680	CAPACITOR	68pF,50V
C532	QCFA1HZ-333	CAPACITOR	0.033μF,50V
C533	QFN41HJ-104	M CAPACITOR	0.1μF,50V
C534	QCFA1HZ-103	CAPACITOR	0.01μF,50V
C536	QER61CM-476	E CAPACITOR	47μF,16V
C537	QER60JM-476	E CAPACITOR	47μF,6.3V
C538	QCFA1HZ-103	CAPACITOR	0.01μF,50V
C539	QFN41HJ-104	M CAPACITOR	0.1μF,50V
C540	QCSA1HJ-181	CAPACITOR	180pF,50V
C542	QFN41HJ-104	M CAPACITOR	0.1μF,50V
C549	QCFA1CZ-104	CAPACITOR	0.1μF,16V
L501	PU54223-470J	COIL	47μH
L503	PU54223-101J	COIL	100μH
L504	PU59988-270J	COIL	27μH
L505	PU59988-180J	COIL	18μH
L506	PU59988-560J	COIL	56μH
L507	PU59988-100J	COIL	10μH
L508	PU59988-181J	COIL	180μH
L509	PU59988-180J	COIL	18μH
BKT1	PQ21512	S.FRAME(PRE.)	
CN501	PEMC0978-116	FLOATING B TO B	
CN502	PEMC1004-006	CONNECTOR	

- TERMINAL SECTION -

D703	1SS133	DIODE
D704	1SS133	DIODE

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VIDEO UNIT BOARD ASSEMBLY <05>

PWBA	PB10723A-02	VIDEO UNIT BOARD ASSY	
IC1	JCP0035	IC	
IC2	TL8838P	IC	
Q1	2SA1576(QRS)	TRANSISTOR	
Q2	2SC4081(QRS)	TRANSISTOR	
Q3	2SA1576(QRS)	TRANSISTOR	
Q4	2SC4081(QRS)	TRANSISTOR	
Q6	2SC4081(QRS)	TRANSISTOR	
Q7	2SC4081(QRS)	TRANSISTOR	
Q8	2SC4081(QRS)	TRANSISTOR	
Q9	2SC4081(QRS)	TRANSISTOR	
Q10	2SA1576(QRS)	TRANSISTOR	
Q11	DTA124EU	TRANSISTOR	
Q12	2SA1576(QRS)	TRANSISTOR	
D1	1SS133	DIODE	
D2	1SS133	DIODE	
D4	1SS133	DIODE	
R1	NRSA63J-681N	RESISTOR	680Ω,1/16W
R2	NRSA63J-475N	RESISTOR	4.7MΩ,1/16W
R3	NRSA63J-475N	RESISTOR	4.7MΩ,1/16W

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
R4	NRSA63J-391N	RESISTOR	390Ω,1/16W
R5	NRSA63J-562N	RESISTOR	5.6KΩ,1/16W
R6	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R7	NRSA63J-681N	RESISTOR	680Ω,1/16W
R9	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R10	QRD161J-112	RESISTOR	1.1KΩ,1/6W
R11	NVP1301-683N	V RESISTOR,PB Y LEVEL	68KΩ
R12	NRSA63J-821N	RESISTOR	820Ω,1/16W
R13	NRSA63J-333N	RESISTOR	33KΩ,1/16W
R14	NRSA63J-331N	RESISTOR	330Ω,1/16W
R15	NRSA63J-681N	RESISTOR	680Ω,1/16W
R16	NRSA63J-182N	RESISTOR	1.8KΩ,1/16W
R17	NRSA63J-222N	RESISTOR	2.2KΩ,1/16W
R18	NRSA63J-561N	RESISTOR	560Ω,1/16W
R20	NRSA63J-471N	RESISTOR	470Ω,1/16W
R21	NRSA63J-152N	RESISTOR	1.5KΩ,1/16W
R22	NRSA63J-152N	RESISTOR	1.5KΩ,1/16W
R23	NVP1301-223N	V RESISTOR ,CARRIER	22KΩ
R24	NVP1301-103N	V RESISTOR,DEVIATION	10KΩ
R26	NRSA63J-512N	RESISTOR	5.1KΩ,1/16W
R27	NRSA63J-122N	RESISTOR	1.2KΩ,1/16W
R28	NRSA63J-681N	RESISTOR	680Ω,1/16W
R29	NRSA63J-272N	RESISTOR	2.7KΩ,1/16W
R30	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R31	NRSA63G-511N	RESISTOR	510Ω,1/16W
R32	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R33	NRSA63J-182N	RESISTOR	1.8KΩ,1/16W
R34	NRSA63J-271N	RESISTOR	270Ω,1/16W
R35	NRSA63J-272N	RESISTOR	2.7KΩ,1/16W
R36	NVP1301-152N	V RESISTOR,YNR LEVEL	1.5KΩ
R37	NRSA63J-392N	RESISTOR	3.9KΩ,1/16W
R38	NRSA63J-222N	RESISTOR	2.2KΩ,1/16W
R39	NRSA63J-681N	RESISTOR	680Ω,1/16W
R40	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R41	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R42	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R43	NVP1301-153N	V RESISTOR,EE Y LEVEL	15KΩ
R44	NRSA63J-334N	RESISTOR	330KΩ,1/16W
R45	NVP1301-103N	V RESISTOR,WHITE CLIP	10KΩ
R46	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R47	NRSA63J-434N	RESISTOR	430KΩ,1/16W
R48	NRSA63J-271N	RESISTOR	270Ω,1/16W
R49	NRSA63J-681N	RESISTOR	680Ω,1/16W
R50	NRSA63J-511N	RESISTOR	510Ω,1/16W
R51	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R52	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R53	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R54	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R55	NVP1301-472NU	V RESISTOR,REC COL LEVEL	4.7KΩ
R56	NRSA63J-823N	RESISTOR	82KΩ,1/16W
C2	NCS31HJ-271A	CAPACITOR	270pF,50V
C3	QCSA1HG-821	CAPACITOR	820pF,50V
C5	NCS31HJ-390A	CAPACITOR	39pF,50V
C6	NCB31CK-333A	CAPACITOR	0.033μF,16V
C7	NCS31HJ-180A	CAPACITOR	18pF,50V
C8	NCS31HJ-330A	CAPACITOR	33pF,50V
C9	NCS31HJ-151A	CAPACITOR	150pF,50V
C10	NCS31HJ-820A	CAPACITOR	82pF,50V
C11	NCF31HZ-103A	CAPACITOR	0.01μF,50V
C12	NCF31HZ-103A	CAPACITOR	0.01μF,50V
C13	NCS31HJ-820A	CAPACITOR	82pF,50V

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
C14	QETC1HM-474	E CAPACITOR	0.47μF,50V
C15	QETC1HM-474	E CAPACITOR	0.47μF,50V
C16	QETC1EM-475	E CAPACITOR	4.7μF,25V
C17	QETC1CM-106	E CAPACITOR	10μF,16V
C18	QETC1AM-226	E CAPACITOR	22μF,10V
C19	QETC1CM-106	E CAPACITOR	10μF,16V
C20	QETC0JM-227	E CAPACITOR	220μF,6.3V
C21	NCB31CK-333A	CAPACITOR	0.033μF,16V
C22	NCF31HZ-103A	CAPACITOR	0.01μF,50V
C23	QCVB1CN-103	CAPACITOR	0.01μF,16V
C24	QETC1HM-225	E CAPACITOR	2.2μF,50V
C25	QETC1HM-474	E CAPACITOR	0.47μF,50V
C27	NCS31HG-181A	CAPACITOR	180pF,50V
C28	NCB31EK-223A	CAPACITOR	0.022μF,25V
C29	QETC1EM-475	E CAPACITOR	4.7μF,25V
C30	NCS31HG-120A	CAPACITOR	12pF,50V
C31	NCF31HZ-103A	CAPACITOR	0.01μF,50V
C32	QETC1HM-105	E CAPACITOR	1μF,50V
C33	NCB31EK-223A	CAPACITOR	0.022μF,25V
C34	NCS31HJ-121A	CAPACITOR	120pF,50V
C35	NCS31HJ-560A	CAPACITOR	56pF,50V
C36	NCF31CZ-104A	CAPACITOR	0.1μF,16V
C37	NCS31HJ-220A	CAPACITOR	22pF,50V
C39	NCS31HJ-220A	CAPACITOR	22pF,50V
C40	QETC0JM-476	E CAPACITOR	47μF,6.3V
C41	QETC1HM-474	E CAPACITOR	0.47μF,50V
C43	NCB31HK-102A	CAPACITOR	0.001μF,50V
C46	QETC1HM-105	E CAPACITOR	1μF,50V
C47	QETC0JM-107	E CAPACITOR	100μF,6.3V
C48	NCF31CZ-104A	CAPACITOR	0.1μF,16V
C49	QEK61EM-475	E CAPACITOR	4.7μF,25V
C50	QETC1EM-475	E CAPACITOR	4.7μF,25V
C51	NCS31HJ-180A	CAPACITOR	18pF,50V
C52	NCF31HZ-473A	CAPACITOR	0.047μF,50V
C53	QETC1EM-475	E CAPACITOR	4.7μF,25V
C54	QETC1HM-474	E CAPACITOR	0.47μF,50V
C56	NCB31CK-333A	CAPACITOR	0.033μF,16V
C57	NCF31HZ-103A	CAPACITOR	0.01μF,50V
C58	NCF31HZ-103A	CAPACITOR	0.01μF,50V
C59	NCB31CK-333A	CAPACITOR	0.033μF,16V
C60	QETC1EM-475	E CAPACITOR	4.7μF,25V
C61	QETC1HM-105	E CAPACITOR	1μF,50V
C62	QETC0JM-107	E CAPACITOR	100μF,6.3V
C63	NCF31HZ-103A	CAPACITOR	0.01μF,50V
C64	NCF31CZ-104A	CAPACITOR	0.1μF,16V
C65	NCF31HZ-103A	CAPACITOR	0.01μF,50V
C66	NCF31HZ-473A	CAPACITOR	0.047μF,50V
C67	NCS31HJ-101A	CAPACITOR	100pF,50V
C68	NCS31HJ-271A	CAPACITOR	270pF,50V
C69	NCS31HJ-100A	CAPACITOR	10pF,50V
C70	NCS31HJ-560A	CAPACITOR	56pF,50V
C71	NCS31HJ-151A	CAPACITOR	150pF,50V
C72	QETC1HM-105	E CAPACITOR	1μF,50V
C73	NCB31HK-272A	CAPACITOR	0.0027μF,50V
C81	NCF31CZ-104A	CAPACITOR	0.1μF,16V
L2	PU59152-820J	COIL	82μH
L3	PU59152-390J	COIL	39μH
L4	PU59152-330J	COIL	33μH
L5	PU59152-820J	COIL	82μH
L6	PELN0530-561JZ	COIL	560μH
L7	PU59153-101K	COIL	100μH
L8	PU48530-101K	COIL	100μH

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	L9	PU59152-101J	COIL	100μH
	L10	PU59152-101J	COIL	100μH
	L11	PELN0530-561JZ	COIL	560μH
	L12	PU48530-222J	COIL	2.2mH
	L13	PU59152-151J	COIL	150μH
	L14	PU59152-151J	COIL	150μH
	L15	PELN0530-101JZ	COIL	100μH
	LPF1	PELN0825	LOW PASS FILTER	
	DL1	PEVB0439	1H DELAY LINE	
⚠	X1	PEVB0438-02	CRYSTAL RESONATOR	
	CN1	PEMC0712-111	PIN HEADER	
	CN2	PEMC0712-106	PIN HEADER	
	CN3	PEMC0712-109	PIN HEADER	

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AUDIO/CONTROL HEAD BOARD ASSY <12>

	PWBA	PB10718A6	AUDIO/CONTROL BOARD ASSY
	CN1	PU60910-107	WIRE TRAP

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DISPLAY/SWITCH BOARD ASSEMBLY <28>

	PWBA1	PB10726B1-01	DISP/SW BOARD ASSY,J400UC
	PWBA1	PB10726A1-01	DISP/SW BOARD ASSY,J400U
	IC1	UPD16312GB(K)	IC
		or UPD16312GB(E)	IC
	IC2	GP1U581X	IR DETECT UNIT
	D1	1SS132Y	DIODE
	D2	1SS132Y	DIODE
	D6	RD9.1ES-T1B2	ZENER DIODE
	D13	SLR-34MC3F	LE DIODE
	D22	1SS132Y	DIODE,HR-J400UC
	D26	11ES2	DIODE
	D27	1SS133	DIODE
	R1	QRD161J-103	RESISTOR 10KΩ,1/6W
	R2	QRD161J-103	RESISTOR 10KΩ,1/6W
	R3	QRD161J-103	RESISTOR 10KΩ,1/6W
	R4	QRD161J-103	RESISTOR 10KΩ,1/6W
	R5	QRD161J-472	RESISTOR 4.7KΩ,1/6W
	R6	QRD161J-102	RESISTOR 1KΩ,1/6W
	R7	QRD161J-471	RESISTOR 470Ω,1/6W
	R8	QRD161J-104	RESISTOR 100KΩ,1/6W
	R9	QRD161J-103	RESISTOR 10KΩ,1/6W
	R10	QRD161J-103	RESISTOR 10KΩ,1/6W
	R13	QRD161J-331	RESISTOR 330Ω,1/6W
	RA1	QRB045J-333XM	RESISTOR ARRAY 33KΩ,1/8W
	C1	QEK60JM-227	E CAPACITOR 220μF,6.3V
	C2	QCFB1HZ-473	CAPACITOR 0.047μF,50V
	C3	QETC1HM-106	E CAPACITOR 10μF,50V
	C4	QCSB1HJ-470	CAPACITOR 47pF,50V
	C5	QCS31HJ-330	CAPACITOR 33pF,50V
	C6	QETC0JM-476	E CAPACITOR 47μF,6.3V
	L1	PU48530-331J	COIL 330μH
	S1	PU60975-2Z	TACT SWITCH,REC
	S2	PU60975-2Z	TACT SWITCH,PAUSE
	S3	PU60975-2Z	TACT SWITCH,FF
	S4	PU60975-2Z	TACT SWITCH,PLAY
	S5	PU60975-2Z	TACT SWITCH,F MESSAGE
	S6	PU60975-2Z	TACT SWITCH,STOP
	S7	PU60975-2Z	TACT SWITCH,REW

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION
	FDP1	PEDP0073-02	FLUORESCENT DISPLAY PANEL
	HD1	PQM30038-1-2	LED HOLDER
	HD2	PQ34685	FDP HOLDER(L)
	HD3	PQ34686	FDP HOLDER(R)
	CN1	PEMC0979	B TO B CONN
	CN2	PEMC0724-006	B TO B CONN

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SWITCH/JACK BOARD ASSEMBLY <36>

	PWBA1	PB10726A2-01	SWITCH/JACK BOARD ASSEMBLY
	D3	1SS132Y	DIODE
	D4	1SS132Y	DIODE
	S10	PU60975-2Z	TACT SWITCH,R A EDIT
	S11	PU60975-2Z	TACT SWITCH,POWER
	S12	PU60975-2Z	TACT SWITCH,MENU
	S13	PU60975-2Z	TACT SWITCH,SELECT I/O
	S14	PU60975-2Z	TACT SWITCH,START
	S15	PU60975-2Z	TACT SWITCH,CH+
	S16	PU60975-2Z	TACT SWITCH,CH-
	JA51	PEMC0922	PIN JACK(SW)
	JA52	PEMC0922	PIN JACK(SW)
	CN51	PEMC0918-007	FFC CONNECTOR
	CN52	PEMC0723-006	B TO B CONN

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DECK TERMINAL BOARD ASSEMBLY <51>

	PWBA1	PB10718A1-04	DECK TERMINAL BOARD ASSEMBLY
	Q3	PT491F	END SENSOR
	D1	SIR-381SB3FM	LE DIODE
	D2	MTZ6.2BT-77	ZENER DIODE
	R1	QRD161J-102	RESISTOR 1KΩ,1/6W
	R3	QRD161J-331	RESISTOR 330Ω,1/6W
	R4	QRD161J-820	RESISTOR 82Ω,1/6W
	C1	QCVB1CM-103	CAPACITOR 0.01μF,16V
	L1	PELN0530-101JW	COIL
	PS1	PS5705HR	PH INTERRUPTER
	CN1	PEMC0915-016	FFC CONNECTOR
	CN2	PU60642	7PIN CONNECTOR
	CN3	PU60640	4PIN CONNECTOR
	CN4	PU60910-4	CONNECTOR

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LOADING MDA BOARD ASSEMBLY <55>

	PWBA2	PB10718A2-01	LOADING MDA BOARD ASSEMBLY	
⚠	IC1	BA6418N	IC	
	C1	QETA1CM-227	E.CAPACITOR	220μF,16V
	CN1	PU60910-104	WIRE TRAP	

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CASSETTE HOUSING BOARD <56>

	PWBA3	PB10718A3-01	CASSETTE HOUSING BOARD ASSY	
	Q2	PN268VI	PHOTO TRANSISTOR	
	C1	QCVC1CM-103	CAPACITOR	0.01μF,16V
	S1	PESW0589	PUSH SWITCH	

SECTION 6
TECHNICAL INFORMATION

6.1 MECHACON CIRCUIT

6.1.1 Mechacon CPU pin function(IC601) 1/2

PIN NO.	LABEL	IN/OUT	NOTE
1	S CURVE	IN	Tuning check
2	SAP/ST	-	GND
3	NC	-	NC
4	AVG FM	IN	Auto tracking data (average voltage of PB FM level) input
5	AVss	-	GND
6	TEST	-	NC
7	X2	-	NC
8	X1	-	UNSW5V
9	Vss	-	GND
10	OSC1	IN	Main system clock
11	OSC2	OUT	
12	RESET	IN	RESET AT CONNECT VCR TO AC
13	(NMI)	-	GND
14	YNR CTL	OUT	Picture control (YNR CTL: L)
15	PB SPCL	OUT	Special PB mode: L
16	P MUTE	OUT	Picture mute control (Mute on: L)
17	SYNC DET	IN	Sync detect (No sync: H)
18	LOCKDET	IN	Tuning lock check
19	SERVO	OUT	Capstan motor control (Servo CTL: L / Mechacon CTL: H)
20	EE	OUT	EE Mode: L
21	PAUSE	OUT	Capstan motor control (PAUSE: L)
22	TU FG	IN	Take-up reel rotation detect / tape remaining time detect
23	VIDEO	OUT	VIDEO Mode: H
24	N.C	-	NC
25	TU MUTE	OUT	Tuner mute control (Mute on: H)
26	HRECST	-	NC
27	CLK REF	IN	Power down detect (Power down: L)
28	A MUTE	OUT	Audio mute control (Mute on: H)
29	A.I DATA	-	NC
30	A.I CLK	-	NC
31	H SEL	OUT	Head select control (SP: L / EP: H)
32	A/M/S	OUT	PRE/REC circuit control (Auto: M / Manual: H / Slow & Still: L)
33	MCE	OUT	MEMORY IC CHIP ENABLE
34	REC ST	OUT	REC START: H
35	TU DATA	OUT	Tuning control serial data output
36	S-CLK	OUT	Serial data shift clock output
37	REC	OUT	REC: H
38	N REC	-	NC
39	START S	IN	Leader tape detect (Detect on: L)
40	CASS	IN	Cassette sensor (Sensor on: L)

Table 6-1-1-A MECHACON CPU pin function(1/2)

6.1.2 Mechacon CPU pin function(IC601) 2/2

PIN NO.	LABEL	IN/OUT	NOTE
41	LSA	IN	Mechanism mode detect (SW A)
42	LSB	IN	Mechanism mode detect (SW B)
43	REC SF	IN	REC safety switch detect (SW on: L)
44	END S	IN	Trailer tape detect (Detect on: L)
45	VP CTL	OUT	V.pulse addition timing control
46	CAP REV	OUT	Capstan motor control (FWD: H / REV: L)
47	CSB	OUT	Chip select
48	REA OUT	OUT	Remoto pause control (PAUSE: L)
49	NC	-	NC
50	RC IN	IN	Remoto control data input
51	NC	-	NC
52	CTL C/D	IN	CTL Pulse input (Mode detect / blank portion detect)
53	SAP ON	-	NC
54	SP/LP/EP	OUT	Mode select (SP / LP / EP)
55	LCM1	OUT	Loading motor control (1)
56	LCM2	OUT	Loading motor control (2)
57	S-OUT	OUT	On screen control data
58	S-IN	IN	/ FDP Control data output
59	S-CLK	OUT	Data transfer clock
60	SERVO DATA	OUT	Servo IC control data
61	M-DATA	IN/OUT	Memory IC data
62	SERVO CLK	OUT	Data transfer clock
63	VCC	-	System power
64	STB	IN	Clock output permission
65	TU CE	OUT	Chip enable
66	P CTL	OUT	Power control (POWER ON: H)
67	CTL CLOCK	IN	INDEX Control
68	NC	-	GND
69	CAP FG	IN	Tape speed detect / Back space count
70	DUTY I/O	IN/OUT	INDEX Data control
71	D FF	IN	DRUM ROTATION DETECT / REC Timing control
72	A VCC	-	System power (for ANALOG)
73	PAUSE IN	IN	Remote pause control
74	PROTECT	IN	Power protect detect (POWER OFF: L)
75	DRUM V	OUT	Drum motor control (fh CORRECTION)
76	CAP V	OUT	Capstan motor control
77	NC	-	GND
78	NC	-	GND
79	NC	-	GND
80	NC	-	GND

Table 6-1-1-B MECHACON CPU pin function(2/2)

6.2 TIMER CIRCUIT

6.2 Timer CPU pin function(IC1)

PIN NO.	LABEL	IN/OUT	NOTE
1	SW1	-	GND
2	SW2	-	
3	SW3	-	
4	SW4	-	
5	DO	OUT	SERIARL DATA OUTPUT
6	DI	IN	SERIAL DATA INPUT
7	VSS	-	GND
8	CLK	IN	DATA TRANSFER CLOCK
9	STB	OUT	CLOCK OUTPUT PERMISSION
10	KEY1	IN	KEY SCAN DATA INPUT
11	KEY2	IN	
12	KEY3	IN	
13	KEY4	IN	
14	VDD	-	UNSW5V
15	S1	OUT	SEGMENT DISPLAY DATA / KEY SCAN PULSE OUTPUT
16	S2	OUT	
17	S3	OUT	
18	S4	OUT	
19	S5	OUT	
20	S6	OUT	
21	S7	OUT	
22	S8	OUT	
23	S9	OUT	
24	S10	OUT	
25	S11	OUT	
26	S12	OUT	
27	VEE	-	FOR FDP DRIVE
28	S13	OUT	SEGMENT DISPLAY DATA / KEY SCAN PULSE OUTPUT
29	S14	OUT	
30	S15	OUT	
31	S16	OUT	
32	-	-	NC
33	G5	OUT	COLUMN DISPLAY DATA OUTPUT (GRID CONTROL)
34	G4	OUT	
35	G3	OUT	
36	G2	OUT	
37	G1	OUT	
38	VDD	-	UNSW5V
39	TIMER	-	NC
40	FAMILY MES.	OUT	LED CONTROL (LED ON: L)
41	REC	-	NC
42	TV/VIDO	-	NC
43	VSS	-	GND
44	OSC	-	NOT USED

Table 6-2 TIMER CPU pin function